



## BINDING LIST JAN 1 1922



Chem & Phys

THE

# Royal INSTITUTE OF CHEMISTRY

### GREAT BRITAIN AND IRELAND.

FOUNDED, 1877.
INCORPORATED BY ROYAL CHARTER, 1885.

### PROCEEDINGS.

1919.

### PART I.

REPORT OF THE COUNCIL for the Year ending 3rd March, 1919.
FINANCIAL STATEMENTS FOR 1918. BUILDING FUND.
PROCEEDINGS OF THE COUNCIL (DEC. 1918-JAN. 1919):

Portrait of Sir James Dobbie; Officers and Members of Council; Suggested Revision of Bye-Laws; Munitions Chemists; Professional Interests.

MEMBERS AND STUDENTS WITH THE FORCES.

THE REGISTER.

NOTICES: Examinations; Appointments Register, &c.

Issued under the supervision of the Proceedings Committee.

RICHARD B. PILCHER,

Registrar and Secretary

30, Russell Square, London, W.C. 1. February, 1919.

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### Proceedings Committee, 1918-19.

HORATIO BALLANTYNE (Chairman),
SIR HERBERT JACKSON (President),
CECIL H. CRIBB,
J. T. DUNN,
ALEXANDER LAUDER,
J. H. LESTER,
D. NORTHALL-LAURIE,
G. H. PERRY, M.B.E.,
GEORGE STUBBS, O.B.E.,
THOMAS TICKLE.

### REPORT OF THE COUNCIL

(1918-1919).

To be submitted to the Fellows and Associates of the Institute at the Forty-first Annual General Meeting, to be held on Monday, March 3rd, 1919.

### The Work of the Institute During the War.

The Council of the Institute in presenting this Report cannot refrain from expressing their thankfulness on the victory of the Allied Arms and the prospect of peace. Before, however, dealing with the work of the Institute during the past year, the Council desire to place on record a brief résumé of those activities connected with the war in which the Institute, its Fellows and Associates, and British chemists generally have taken a part.

In September, 1914, the question of securing adequate supplies of chemical reagents, laboratory glass and porcelain, and filter paper claimed the early attention of the Institute and the Society of Public Analysts. Joint meetings of the Councils of the two bodies were held to consider the matter. A Committee from the two bodies was formed to deal with the question of reagents, and a "List of Reagents for Analytical Purposes, with notes indicating the standard of purity regarded as necessary for analytical work," was produced and circulated to manufacturers, some of whom undertook to provide reagents complying with the tests prescribed.

In October, 1914, the Council of the Institute appointed a Glass Research Committee, the primary object of which was to provide formulas for the manufacture of laboratory ware. Their work was subsequently extended to embrace many other varieties of glass and has continued until practically the date of the armistice. The valuable results attained are

familiar to the Members of the Institute from the reports which have appeared in the Proceedings from time to time.

From the early months of the war the Institute maintained a register of chemists who were willing to place their services at the disposal of the country. By this means many were introduced to commissions with the active forces, whilst others were transferred from their occupations to munition work. When the Ministry of Munitions was established, this register was rendered available to all chemists whether previously connected with the Institute or not. The Institute was thus ready to give immediate assistance, and, in all, nearly two thousand chemists-for analytical work, for research, plant management, etc.—were brought into touch with H.M. Factories, the Government Laboratories, Woolwich Arsenal (Research and Inspection Departments, Royal Gun and Carriage Factory, etc.), Royal Aircraft Establishment, Aeronautical Inspection Department, and controlled establishments concerned with industries connected with the war.

In this connection attention is drawn to the correspondence which has passed between the Institute and Mr. K. B. Quinan, C.H., and which is set out on pp. 24—26.

In May, 1915, in consequence of the employment of poisonous gases by the enemy as a weapon of offence, there was a sudden demand for "men with a knowledge of chemistry" which was largely met through the agency of the Institute. The work of the officers and men of the Special Brigade, R.E. (Gas Services), has been commended in high terms in the despatches of Lord French and Sir Douglas Haig. Chemists were also engaged in devising methods of defence against gas attacks. Officers and men were obtained to assist in the work of the late Lieut.-Colonel Harrison in this connection. During 1915 and 1916, similar assistance was rendered to the Admiralty, when the late Commander Brock secured, through the agency of the Institute, about 500 men, mainly chemists and chemical students, for work of a special character, in which scientific knowledge was of advantage. Some of these men were present at the Zeebrugge attack.

Officers with technical knowledge were also introduced by the Institute to the Royal Army Medical Service, the Army Ordnance Department, the Royal Army Service Corps, the Inland Water Transport, the Royal Air Force (including the Kite Balloon Section), and the Secret Services.

Throughout the war the Institute has been frequently consulted by Government Departments. The laboratories of the Institute have been in constant use by the Ministry of Munitions, and, for a considerable period, by the Admiralty. The Council Room has been placed from time to time at the disposal of a Service Committee of the War Office, and other authorities.

The Registrar of the Institute has been appointed a member of the Resettlement of Officers Committee under the Appointments Department of the Ministry of Labour, and a Member of the Advisory Board dealing with the work of the Department at headquarters in France.

The Council desire to express their appreciation of the loyal and indefatigable services of Mr. Pilcher, Miss Cawston and other members of the staff during the past four years of stress. The additional work thrown upon them by the above-mentioned activities of the Institute, as well as that due to the recent expansion of its activities in other directions, has been very great, but it has been coped with cheerfully and in a manner uniformly satisfactory to the Council.

### I. THE ROLL OF THE INSTITUTE.

During the year covered by this Report the Council have elected 161 Fellows (of whom 55 were Associates and 1 a Registered Student), 553 Associates (of whom 77 were Registered Students), and 69 new Students.

The Council record with regret the death of 25 Fellows, 8 Associates, and 7 Students.

Fellows.
Captain and Adjutant James Scott
Bainbridge.
David Bendix.
Arthur Clegg Bowdler.

Harry Broadbent.
Thomas Charles Cloud, A.R.S.M.
Charles Gerard Cresswell.
William Adam Dixon.
Alfred Fairfax.

Thomas Farries. Captain Alexander Gemmell. Richard John Hall, M.Sc. (Vict.). Walter Augustus Handcock. Lieut.-Colonel Edward Frank Harrison, C.M.G., B.Sc. (Lond.). Henry James Helm, I.S.O. David Smith Jardin, A.R.C.S. William Joel Kemp. Professor Edmund Albert Letts, D.Sc., Ph.D. Thomas Watson Lovibond. James Nimmo. Sir Alexander Pedler, C.I.E., F.R.S. Herbert Wallace Roberts, M.B.E., Alfred Gordon Salamon, A.R.S.M. Professor Alfred Senier, M.D.(Mich.), Hon. D.Sc. (R.U.I.), Ph.D.

Frederick William Streatfeild.

Thomas Tyrer.

ASSOCIATES.

Edwin Sidney Hawkins, M.Sc. (Birm.). Lieut. Simon James Jones.

Elias Mendoza.

2nd Lieut. George William Moore Thomas Stanley Norman, M.A. (Cantab.).

William Arthur Silvester, M.Sc. (Sheff.).

James Carter Spensley, M.A. (Cape of Good Hope). Captain William Currie Taylor,

STUDENTS.

Lieut. Jesse Dell Berridge. Captain Harold William Brooke. Lieut. Clarence Edward Butcher. Alfred James Macritchie Campbell. 2nd Lieut. Stuart Wycliffe Goodwin. 2nd Lieut. James Salsbury Smith. Captain Allan Robert Steele.

Of the above, the following died on active service:-

CAPTAIN AND ADJUTANT JAMES SCOTT BAINBRIDGE.
LIEUT, JESSE DELL BERRIDGE.
CAPTAIN HAROLD WILLIAM BROOKE.
LIEUT, CLARENCE EDWARD BUTCHER.
CAPTAIN ALEXANDER GEMMELL.
2ND LIEUT, STUART WYCLIFFE GOODWIN.

LIEUT.-COL. EDWARD FRANK HARRISON, C.M.G., Officer of the Legion of Honour.

LIEUT. SIMON JAMES JONES.

2nd Lieut. George William Moore. 2nd Lieut. James Salsbury Smith. Captain Allan Robert Steele.

CAPTAIN WILLIAM CURRIE TAYLOR.

The resignations of 6 Fellows and 2 Students have been accepted.

At the date of this Report (January 31st, 1919), the Register contains the names of 1,489 Fellows, 974 Associates, and 349 Registered Students. The number of Members has been increased by 614, the number of Students has decreased by 21.

### 2. PROFESSIONAL CHEMISTRY AND THE WAR.

The Council have pleasure in recording that the following

honours have been conferred on Members of the Institute during the year:—

K.B.E.

Prof. William Jackson Pope, F.R.S.

KNIGHT.

Charles Henry Burge.

C.M.G.

Lieut.-Col. Arthur Smithells, F.R.S.

C.B.E.

Prof. Edward Charles Cyril Baly, F.R.S.

George Christopher Clayton, Prof. John William Cobb, Edward William Lucas,

William Francis John Wood.

0.B.E.

Alexander Charles Cumming. Frank George Edmed.

Charles Stanley Gibson.
Thomas Eustace Hill.
William Rintoul

John Rogers,

Samuel Smiles, F.R.S. Martha Annie Whiteley.

M.B.E.

Sydney Lipscomb Elborne.

Edward Victor Evans. James Irvine Orme Masson. Frances Mary Gore Micklethwait.

James Miln Thomson. Frederick Malcolm Wharton.

3. THE WORK OF THE COUNCIL.

The Council have held II Meetings, and there have been in addition 75 meetings of Committees, Boards, and Sub-Committees.

The following is a list of Committees of the Council and their respective Chairmen:—

COMMITTEE. CHAIRMAN.

Finance ... ... The Hon. Treasurer. General Purposes ... ... The President.

Glass Research ... The President.
House ... Geo. Stubbs.
Institutions ... Arthur Harden.

Library ... ... (The late A. Gordon Salamon).

Nominations and Examinations The President.

Proceedings ... ... Horatio Ballantyne.

Public Appointments ... A. Chaston Chapman.

Standards ... J. T. Dunn.

The vacancy in the office of Hon. Treasurer, which occurred through the death of Mr. Alfred Gordon Salamon, was filled by the election of Mr. Edward William Voelcker, and the vacancy on the Council, caused by the retirement of Professor Jocelyn Field Thorpe, by the election of Professor Frederic George Donnan.

The President and Sir James Dobbie have been re-appointed for the year 1919 as representatives of the Institute on the Conjoint Board of Scientific Societies.

Mr. Horatio Ballantyne, Vice-President, represented the Institute at the Technical Institutions Conference on Patent Law Amendment, and subsequently took part, with Dr. F. W. Passmore and the Registrar, in a deputation which attended at the Board of Trade with reference to the proposed Patents and Designs Bill. (A short account of the proceedings was published in Part IV., 1918.)

The Registrar attended as the representative of the Institute a meeting of a committee of the Salters' Company, appointed to consider steps to be taken to promote the interests of chemical industry. The company has founded a Research Institute, of which Dr. M. O. Forster has been appointed Director.

### 4. FINANCE.

The Financial statements for 1918 are attached to this Report (pp. 16-20).

During the year the loan from the bank has been paid off-Subscriptions, owing to increased membership, show the receipt of £400 more than in 1917, but the expenditure on printing and stationery, postage and salaries, was over £1,000 in excess of that of 1917. In the future these expenses will necessarily be still heavier.

Building Fund.—During 1918 £167 128. 4d. was contributed to the Building Fund and a further loan of £424 was made from the general funds to discharge building contractors' accounts.

As announced in Proceedings, Part IV., 1918, and in the Subscription Notices sent to Members and Students at the close of the year, the Council have found it necessary to raise the annual subscriptions in order to provide for the activities of the Institute, which have not only increased in the past but will be greatly increased in the future. The present value of money, compared with pre-war standards, would in any case

have made a substantial difference to the financial position of the Institute, and it was felt imperative, therefore, to make the alteration without delay. So far as could be gathered from the discussions which had taken place at meetings of various local sections the Council formed the opinion that the Fellows and Associates would be willing to support them in the decision at which they arrived, and they are gratified to find that with very few exceptions their action has been approved.

### 5. THE GLASS RESEARCH COMMITTEE.

The Glass Research Committee have communicated several new formulas to the Ministry of Munitions, mainly for war purposes. The accounts, both for laboratory glass research and optical glass research, have been closed, and out of the £900 granted by the Department of Scientific and Industrial Research, a balance of £239 138, 5d, has been returned to the Department. Over sixty formulas were devised for the use of British manufacturers, the investigations involved being almost entirely carried out by Sir Herbert Jackson, or under his immediate supervision. The Committee have continued the discussion on tests for laboratory glass and porcelain, and have had the advantage of conferring further with manufacturers on the subject. They hope in due course to publish the tests proposed.

### 6. HOUSE COMMITTEE.

On the advice of the House Committee additional furniture was purchased early in the year. Some expense was also incurred by necessary repairs and small alterations to the building.

### 7. INSTITUTIONS COMMITTEE.

The Council have added eight. Institutions to the list of those formally recognised for the training of candidates for the Examinations of the Institute (Proceedings, Part IV., 1918, page 8). Applications from several other Institutions are under consideration.

### 8. THE LIBRARY.

The Council and Library Committee have pleasure in recording their thanks to donors of books, journals and pamphlets during the year. The bequest of the late Mr. George T. Holloway of books formerly in the possession of Sir Humphry Davy, John Davy, and Lady Davy has already been reported. The bookcase for the purchase of which Mr. Holloway also left the Institute a sum of £25 will, it is hoped, shortly be placed in the Library.

The Institute has decided to participate in the Library extension scheme of the Chemical Society, and Members will shortly have the privilege of making full use of the Chemical

Society's Library.

### G. PUBLIC APPOINTMENTS COMMITTEE.

The Public Appointments Committee have dealt with many matters of professional interest to chemists, the main subject being the suggested scheme for a Government Chemical Service, of which particulars were published in Proceedings, Part IV., 1918. The scheme has been sent to the Government Departments concerned and has also been widely circulated.

In conjunction with representatives of the Society of Public Analysts, the Committee have given special attention to the question of remuneration of public analysts and official agricultural analysts, which has been seriously affected by the prevailing economic conditions. Public analysts have been advised to apply for the revisal of their contracts and a circular letter in the following terms has been addressed to local authorities:—

Dear Sir.—A committee representing jointly the Institute of Chemistry and the Society of Public Analysts desires to direct attention of all Local Government Authorities concerned with the Sale of Food and Drugs and Fertilisers and Feeding Stuffs Acts to the present position of Public Analysts and Official Agricultural Analysts.

Under prevailing conditions such analysts have to bear, in

addition to the increased cost of living, the greatly increased cost of materials and apparatus, and to pay higher salaries

than formerly to their assistants.

The Councils of the Institute of Chemistry and the Society of Public Analysts understand that some authorities have already taken these conditions into consideration, and have suitably revised the terms of their analysts' appointments. If, therefore, your authority has not yet been able to give attention to this matter, the Councils of the Institute and the Society urge that it is very desirable that the terms of the appointments of your analysts should be revised at as early a date as possible, having regard to the additional expenses referred to.

We may remind you that under the sale of Food and Drugs Acts authorities are empowered to pay Public Analysts such remuneration as shall be mutually agreed upon, and additional payments of the kind suggested can, therefore, be granted without reference to the Local Government Board.

Yours faithfully,

HERBERT JACKSON,
President of the Institute of Chemistry.
SAMUEL RIDEAL.

President of the Society of Public Analysts.

To the Clerks to the County, City and Borough Councils concerned with the Administration of the Sale of Food and Drugs Acts.

The opinions of public analysts with regard to participation in a proposed scheme of superannuation of Local Government officials having been invited, a meeting was held at the Institute on January 1st, to consider the replies received. Dr. Samuel Rideal, President of the Society of Public Analysts, was in the chair, and as a result of the discussion the Secretary of the Departmental Committee on the Superannuation of Persons Employed by Local Authorities was informed that public analysts, whether occupying whole or part time appointments, were in favour of their inclusion in any scheme which might be adopted for Local Government officials, and a memo-

randum has been prepared for submission to the Secretary in accordance with his request.

The Public Appointments Committee of the Institute are dealing with questions relating to professional chemists whose interests may be affected by the proposed establishment of a Ministry of Health.

### 10. STANDARDS COMMITTEE.

The Standards Committee have had under consideration proposals with reference to the preparation and issue of authoritative standards similar to those issued by the U.S.A. Pureau of Standards. The standardisation of methods of callysis is, in the opinion of the Council, undesirable save in the case of purely empirical methods. The provision of standard samples and of certain pure chemicals would, however, be useful, and the Council propose to consider this matter further in conjunction with the Society of Public Analysts, the Society of Chemical Industry, and the Institute of Metals,

### II. EXAMINATIONS.

The Board of Examiners for 1917-18 has continued in office. Examinations have been held in London, New Zealand, and Mauritius.

The results are summarised in the following table:—

	F 7 7	MINE.	J. 1'.\	>>FT	
Final (A.I.C.) Examination:— Branch (d) Organic Chemistry Branch (e) Chemistry of Food and Drugs, e	te.	4		2 3	
Branch $(f)$ Biological Chemistry		Z	* * *	U	
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The thanks of the Council have been accorded to Dr. J. K. H. Inglis and Dr. H. A. Tempany for supervising the Examinations held in New Zealand and Mauritius, respectively; also to Dr. Bernard Dyer and Mr. A. Chaston Chapman for the use of their laboratories for examination purposes.

The Council hope that it may be possible to resume holding Examinations of the Institute in April next.

### 12. REGULATIONS.

In July, 1918, the Council adopted Regulations formulated in accordance with the Resolutions passed at the Extraordinary General Meeting held on April 27th, 1918 (see Proceedings, Part III., 1918). The main object of the changes made is to provide for the enrolment of trained and competent chemists who satisfy the Council that they are qualified within the provisions of the Charter. The result of the modification of the conditions is shown in the increase in the Roll of the Institute, which the Council feel will strengthen considerably the position of the Institute as the representative body of professional chemists of this country.

### 13. LOCAL SECTIONS.

Local Sections have been formed at Birmingham, Edinburgh, Glasgow, Gretna, Liverpool, Manchester, and Swansea. Steps are being taken to form a section in London. The rules for Local Sections have been under consideration at each centre.

### 14. APPOINTMENTS REGISTER.

Until the signing of the armistice the Appointments Register remained available to all chemists; but, in view of the prospect of peace, and the early release of many chemists from the Forces and from Government and controlled establishments, the Council decided to restrict the use of the Register to Fellows and Associates of the Institute, and chemists who have been on active service. The Institute is co-operating with the Appointments Department of the Ministry of Labour in advising chemical students who have been with the forces as to their training and future careers. The Council have taken steps to direct the attention of British manufacturers to the facilities afforded by the Appointments Register. They hope that Fellows and Associates will assist in making the Register known and will notify the Registrar of vacancies for qualified chemists, in order that companies and firms may reap,

the full advantage of their services in the development of British industry.

### 15. HONORARY CORRESPONDING SECRETARIES.

The thanks of the Council are accorded to the Honorary Corresponding Secretaries, in Overseas Dominions and India, for their services during the year.

### 16. PUBLICATIONS, 1917—1918.

Four Parts of Proceedings have been issued and the Register is now in proof for publication at an early date.

30, Russell Square, London, W.C. 1. January 31st, 1919.

### REPORT OF THE AUDITORS.

We hereby certify that we have examined the Accounts of the Institute for the year ended 31st December, 1918, compared the Vouchers with the entries in the books, and that the following statements are correct in accordance therewith. Certificates from the Bank of England and the London County and Westminster and Parr's Bank, Ltd., for investments held by them for the Institute at the above date have been produced.

L. T. THORNE, JAMES CONNAH, Hon.
Auditors
1918-19

DAVID HENDERSON, Chartered Accountant.

E. & O. E. January 31st, 1919.

### THE INSTITUTE OF CHEMISTRY

Founded, 1877.

### STATEMENT OF RECEIPTS AND EXPENDITURE

	CENERAL
1917.	GENERAL RECEIPTS. £ s. d. £ s. d
1311.	Balance at Bank on the 31st
£137 13 5	Dec., 1917 320 4 10
******	Subscriptions—
1,233 15 0	Fellows 1,315 13 0
631 1 9	Associates' 973 7 6
104 10 0	Students' 80 10 0
13 15 0	Entrance Fees 1,005 18 6
195 5 1	Dividends 188-14-3
16 15 2	Sale of Publications 22 17 9
6 3 8	Sundry Receipts 66 16 1
	Examinations and Laboratory
1,005 19 8	Account 932 2 4
5 12 6	Appointments Register 42 14 9
57 15 0	Advertisements in the Proceed- ings 97 5 0
4,027 19 , 3	5,046 4 0
_,	Life Compositions reserved for
110 8 0	Investment 215 5 0
24 0 6	Special Edition of the History
88 4 3	Income Tax Recovered
	Repayment of Loan from Build-
100 0 0	
190 0 0	Sale of 4½ % War Least  Building Fund Account—
86 12 4	Interest on Loan 99 9 1
fn.528 9 1	£5,460 18 1

### OF GREAT BRITAIN AND IRELAND.

Incorporated by Royal Charter, 1885.

FOR THE YEAR ENDED DECEMBER 31st, 1917.

ACCOUNT.					
1917.	EXPENDITURE.		£	8.	d
£379 2 2	Printing, Stationery, Office Books		908	12	4
151 7 0	Postage		241	17	10
300 0 0	Rent		300	0	0
364 5 5	Rates and Taxes		228	1	8
57 4 8	Insurance		415		10
162 7 3	Repairs and Furnishing		179	12	9
1,095 12 2	Salaries, Wages, etc		1.489	3	2
33 17 8	Advertisements		29	6	7
167 1 0	Gas, Water. Electric Light and Power		270	12	2
<b>2</b> 2 2 <b>1</b> 1	Telephone	• • •		11	()
	Examiners and Assistants (Fees	and			
186 8 3	Expenses)		68	7	1
52 9 1	Apparatus and Materials		19	14	5
<b>25 17</b> 8	Library Account (see over)		25	()	0
133 3 4	Household, Fuel, etc	• • •	$\overline{i}(\cdot)$	9	7
68 4 8	Miscellaneous Expenses		126	4	9
11 2 4	Legal Expenses		22	18	6
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9 11 5	CI D I		15	10	5
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60 0 0	Loan to Building Fund (additional)		424	()	0
69 0 3	Interest on Loan from Bank		10		0
21 0 0	Donations		2.5	0	()
<b>4</b> 30 4 10	Balance 142 1				
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	Less due to Building, Fund 1				
			236	8	
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£8,528 9 8		£	\$5,460	18	1
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# STATEMENT OF ASSETS AND LIABILITIES, Dec. 31st, 1918.

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# BUILDINGS FUND ACCOUNT for the Year ended Dec. 31st, 1918.

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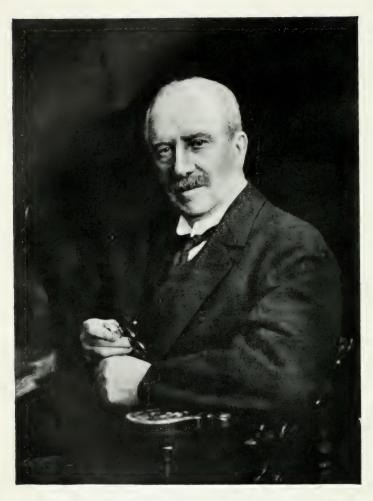
# INSTITUTE OF CHEMISTRY BUILDING FUND.

STATEMENT OF RECEIPTS AND PAPENDITURE SINCE THE OPENING OF BUILDING FUND A/C, 1909—1918.

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TRE, £ s. 938 1	17.524 1.362 64	± 65 ±				
EXPENDITURE.  £ Site and Building Cost to date: Bedford Estate Contractors and Subcontractors and Subcontractors.	Architect, and Surveyor 17,824 0 Architect, and Surveyor 1,302 5 Electrical Engineers 64 6	Logal Expenses Insurance (Terk of Works	Miscellancous Expenses (Printing, Postages, etc.)	Investments at cost, including Commission	Interest on Loan from General A/c	
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κ. κ. d. 17,835 10 10 1,149 10 1	neral 300 0 0 2.073 11 2	- is	11 13			£25,991 4 4
	General 300 0 0 2.073 11 2	99 - 1 21 9 5	11 13			225,991 4 4
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SIR JAMES J. DOBBIE, LL.D., D.Sc., F.R.S., PRESIDENT, 1915—1915.

### Proceedings of the Council.

DECEMBER, 1918-JANUARY, 1919.

Library of the Chemical Society.—Dr. Arthur Harden has been nominated as representative of the Institute on the Library Committee of the Chemical Society.

Officers and Members of Council.—The Officers and Members of Council who retire at the Annual General Meeting on March 3rd, 1919, under the provisions of Bye-law 30, are as follows:—Vice-Presidents: Horatio Ballantyne and Arthur Harden, D.Sc., F.R.S.; Members of Council: Charles Olden Bannister, A.R.S.M., Hugh Charles Herbert Candy, B.A., B.Sc., George Gerald Henderson, M.A., D.Sc., F.R.S., Patrick Henry Kirkaldy, Alexander Lauder, D.Sc., Gilbert Thomas Morgan, D.Sc., F.R.S., Dudley Northall-Laurie. George Stubbs, O.B.E., and Thomas Tickle, B.Sc.

The Officers and Members of Council nominated for election in their stead are:—Vice-Presidents: Gilbert Thomas Morgan, D.Sc., F.R.S., and George Stubbs, O.B.E.; Members of Council: William Bacon, B.Sc., Francis Howard Carr, Alexander Charles Cumming. O.B.E., D.Sc., Alexander Findlay, M.A., D.Sc., Ph. D., George Watson Gray, Frank William Harbord, C.B.E., A.R.S.M., Andrew More, A.R.C.S., Benjamin Dawson Porritt, M.Sc., and Ernest Woodhouse Smith, D.Sc.

Suggested Revision of Bye-Laws. - Formation of Local Sections.—A new bye law to the following effect, providing for the formation of Local Sections, is under consideration:—

The Council may authorise the formation of Local

Sections of the Institute in centres where the Membership is sufficient. The Council may contribute from the funds of the Institute towards the formation and maintenance of such Sections. The Council may from time to time make, revoke, and alter Rules relating to such Sections.

Remsed Draft Scheme for the Election of the Council of the Institute.—The Council have approved generally of the following scheme, and have submitted it for the consideration of the Local Sections, inviting suggestions and comments thereon. The scheme as finally approved will be transmitted to the solicitors of the Institute, in order that new Bye-Laws may be prepared to give effect to it:—

- (a) The Council shall consist of 45 Fellows, as follows: One President, 6 Vice-Presidents, 1 Treasurer, 27 Members of Council, and 10 Additional Members of Council elected by the Members representing the following districts respectively:—
  - I. Birmingham and Midlands, including Nottingham.
  - 2. Bristol and South-Western Counties.
  - 3. Liverpool and North-West Coast.
  - London and South-Eastern Counties, including East Anglia.
  - 5. Manchester and district.
  - 6. North-East Coast and Yorkshire.
  - 7. Edinburgh and East of Scotland.
  - 8. Glasgow and West of Scotland.
  - 9. Wales.
  - 10. Ireland.
- (h) The President shall be nominated by the Council and eligible for re-election for three years—as at present.
- and eligible to serve for three years; one-third of their number shall retire annually—as at present.
- (d) The Treasurer shall be nominated by the Council and be eligible for re-election annually—as at present.

- te Twenty-seven Members of Council shall be eligible to serve for three consecutive years; one-third shall retire annually, and not be eligible for re-election until after the lapse of one year. The Council shall nominate six Fellows and any other Fellow may be nominated on the recommendation of twenty or more Fellows and or Associates. If less than three Fellows be so nominated, or less than thirty (in all) be willing to stand for election (apart from those nominated by Districts, see (f) below), the Council shall bring the total up to thirty and the whole shall go to ballot by the general body of Members. The Balloting List shall indicate which Members are nominated by the Council. The twenty-seven Fellows receiving the highest number of votes shall be declared elected Members of Council at the Annual General Meeting. All casual vacancies among these twenty-seven seats shall be filled by the Council.
- Members of the Institute in each of the ten districts (see (a)), shall be elected by the Members in those districts respectively without their names being submitted for ballot to the general body, and shall be eligible for re-election for three consecutive years. The casual vacancies among these ten offices shall be filled by election in the same manner; the Candidate so elected shall complete the period of office of the Member he replaces. In the event of two Candidates receiving an equal number of votes, or in any similar contingency, the matter shall be referred to the Council for decision.

The General Purposes Committee will consider other alterations in the Bye-Laws, called for by the Resolutions adopted at the Extraordinary General Meeting held on 27th April last.

Munitions Chemists. The following correspondence has passed between the Institute of Chemistry and Mr. K. B. Quinan, C.H.:—

Institute of Chemistry,
30, Russell Square, London, W.C. 1,
December 12th, 1918.

To K. B. Quinan, Esq., C.H.,

Ministry of Munitions of War,

Department of Explosives Supplies, Storey's Gate, Westminster, S.W. 1.

DEAR SIR.—On behalf of the Fellows and Associates of the Institute of Chemistry of Great Britain and Ireland, we desire to convey to you an expression of high appreciation of your valuable services to the British Empire and to the Allies during the Great War.

From all Departments and Establishments of the vast organisation for the production of explosives which has been built up so largely under your constructive genius, British chemists unite in acclaiming the example which you have set by your zeal and energy, your wide outlook, and your eminently practical methods of dealing with men and material.

Apart from the fact that this great work has very sub-tantially contributed to the success of the allied arms, the Institute recognises that, through the technical training which you have initiated for chemists engaged under you, many have gained experience which must prove of great benefit to them when they come to devote their energies to the furtherance of the arts of peace. Your work with the Ministry should, therefore, be reflected for many years in the progress of chemical industry in this country.

The Institute congratulates you heartily on the success that has followed your efforts, and on behalf of British chemists desires to add that you carry with you their warm regard and their best wishes for the future.

Yours faithfully,

(Signed HERBERT JACKSON, President. RICHARD B. PILCHER, Registrar and Secretary. MINISTRY OF MUNITIONS OF WAR,
Explosives Department,
Storey's Gate, Westminster, S.W.,
December 27th, 1918.

To The Registrar and Secretary,
Institute of Chemistry of Great Britain and Ireland,
30, Russell Square, London, W.C. 1.

DEAR SIR,—Your very kind letter of the 17th inst. came into my hands only on the morning of the 23rd, on my return from France, and I hasten to thank you and the Members of the Institute for a tribute which I shall always treasure as one of the pleasant fruits of the most strenuous and eventful period of all our lives.

It has been a very great privilege to have been allowed to serve Britain in what I sincerely hope will prove to have been the greatest crisis in her history, and I desire to place upon record my deep appreciation of the unswerving loyalty and support which I have always received from the chemists, engineers, and other scientific men with whom it has been a pleasure to co-operate. To the many friends in the Explosives Department and in the factories I can never sufficiently express my gratitude.

I feel with you that the events of the past four years of war have completely altered the position of the chemist in Great Britain, and I confidently predict that the eyes of the manufacturers of the country will be opened to see the urgency of the need for highly trained chemical supervision of manufacture, and also that the chemists and the teaching institutions of England, and I hope of the Empire, will view their obligations

to industry in an entirely new light.

I only wish that it were to be my lot and privilege to continue to assist to further what I think will be the greatest period of industrial development in England's history.

May science be given an opportunity to play its rightful rôle in industry and may the chemists of this nation so equip

and acquit themselves as to make the title of chemist the proudest in the land.

With renewed assurances of my appreciation,
I remain, dear Sir,
Yours sincerely,
(Signed) K. B. OUINAN.

Chemists and Military Service. -Previous to the signing of the armistice the Council of the Institute had joined with the Chemical Society in an effort to secure the discharge of all qualified chemists, unless actually engaged in chemical work in connection with the war, and of all book jake students to enable them to finish their College courses.

Professional Interests.—The Council has under consideration the question of a Conference of University Teachers with the object of securing greater uniformity in the requirements for the Honours Degrees in Science, and a special committee has been appointed to deal with the matter.

The attention of the Council has been called to an application for incorporation under the Companies Act of a Trade Association, the objects of which would include provision for the analysis of articles for the members of the Association. The Council did not consider that in this case any steps need be taken by the Institute.

## FELLOWS, ASSOCIATES, STUDENTS AND CANDIDATES FOR EXAMINATION WHO ARE SERVING OR WHO HAVE SERVED WITH H.M. FORCES.

### (Supplementary List.)

It is requested that any inaccuracy or omission be reported immediately to the Registrar.

### FELLOWS.

Edgar, E.C., 2nd Lieut. (T.F.), attd. M. of M. Tattersfield, F., Friends' Ambulance Unit. Thomas, J., 2nd Lieut., Royal Scots Fusiliers.

### ASSOCIATES.

Coombs, L. N., Lieut., R.A.O.C.

Dixon, S., R.N.V.R.

Fleet, W. F., R.F.

Gaskell, S., Lieut., R.E.

Griffith, R. O., 2nd Lieut., R.A.F.

Herbert, A. E., O.T.C.

Hume, J., Captain, R.E.

Ingham, F. T., Lieut.

Kirby, G. G., 2nd Lieut., R.A.F. (Meteorological Officer).

Lefebure, V., Major, R.E.

Lewis, F. C., Flight-Cadet, R.A.F.

Mandleberg, J. H., 2nd Lieut.

Needs, F. E., 2nd Lieut., R.F.A.

Page, H. E., Cadet, O.T.C.

Paterson, J. B., Pioneer, R.E.

Regan, C. J., Lieut., R.A.M.C.

Robson, J. C., 2nd Lieut., R.G.A.

Salt, W. A., Captain, R.E.

Steele, A. R. V., Lieut., R.E. and M. of M.

Wallace, T., Captain, Border Regiment.

White, A. G., 2nd Lieut., Cheshire Regiment.

Williams, D. C., Officer Cadet Battalion.

### STUDENTS.

Ayling, E. E., Cadet, University of London O.T.C.

Awcock, G. A., Air Mechanic, R.A.F.

Bateman, E. W., Cadet, University of London, O.T.C.

Campbell, H. H., Gunner, Motor Machine Gun.

Clarke, B. E., R.A.M.C.

Coutie, A., Labour Corps.

Hocking, F. D. M., R.N.

Jones, W. F., 2nd Lieut., R.A.F.

Miller, C. J., Pioneer, R.E.

Murphy, E. A., 2nd Class Mechanic, R.N.V.R.

Ridyard, N. H., R.E.

Rowe, J. W., 2nd Lieut., R.G.A.

Scrase, F. J., Corporal, R.E.

Taylor, J., Pte., H.A.C.

Turner, W. O., Telegraphist, R.N.V.R.

Whitby, W. H., Flight-Cadet, R.A.F.

Wood, C. W., Lieut., R.F.A.

Since the publication of the List given in Proceedings, Part IV., 1918, entries have been altered in the following cases:—

### FELLOWS.

Bruce, Pobert, Major, R.E. (twice mentioned in despatches).

Caw, William, Sergeant, R.E.

Collett, R. L., Captain, R.A.M.C.

Crossley, A. W., Lieut.-Colonel, C.M.G., Staff (mentioned for services).

Evnon, Lewis, Lieut., R.E., seconded A.I.D.

Finnemore, H., Captain, R.E.

Friend, J. Newton, Captain, R.E.

Harrington, A. G., Captain, R.A.M.C. (T.F.).

Hills, J.S., Lieut., R.N.V.R., Armoured Car Division, R.N.A.S.

King, F. E., Captain, Assistant Chemical Adviser.

Matthews, C. P., Captain, R.A.M.C.

Murphy, Paul, Captain, R.E., Officer i c Chemical and Anti-Gas Department.

Raper, H. S., Lieut.-Colonel, R.E.

Smithells, Arthur, Lieut.-Colonel, C.M.G., General Staff.

Stanley, Harry, Captain, Gloucestershire Regiment (mentioned in despatches)

Trotman, S. R., Brevet Major, O.T.C. (mentioned for services).

Walker, F. G. C., Major, R.E. (Military Cross).

Walpole, G. S., Captain, R.A.F.

Willcox, W. H., Colonel, C.B., C.M.G., R.A.M.C. (T.F.).

### ASSOCIATES.

Bosworth, S. M., Captain, R.A.O.C.

Bowack, D. A., Rifle Brigade.

Bunker, S. W., Lieut, Colonel, Royal Fusiliers, attd. R.E., D.S.O., M.C. (twice mentioned in despatches, Cavalier of the Order of St. Maurice and St. Lazarus).

Doidge, R.M., Flight-Cadet, R.A.F. (Distinguished Conduct Medal).

Evans, L. W., Major, Machine Gun Corps, M.C. (mentioned in despatches).

Frith, J. S., Captain (Acting-Major), S. Lanes, Regiment (mentioned in despatches).

Georgi, C. D. V., Captain, R.E. (mentioned in despatches).

Gosney, H. W., Captain, Rifle Brigade, M.C.

Hackney, N., Lance-Corporal, Middlesex Regiment.

Hobson, A. B., Captain, Chemical Adviser, R.E.

Hodgkin, A. E., Major, Chemical Adviser (Military Cross).

Howell, O. R., Lieut. and Quarter-Master, London Regiment.

Inman, W. M., Captain, R.E., Divisional Gas Officer.

Jobling, E., Captain, R.E. (Military Cross).

Kipping, S. P., Cadet, R.G.A.

Lane, K. W., Lieut., R.F.A.

Marshall, F. W. D., Corporal, R.A.M.C.

Matthews, G. L., Captain, Officer Commanding Sanitary Section, R.A.M.C. (mentioned in despatches; Military Cross).

Middleton, H., Chief Petty Officer, R.N.

Monteith, W., Corporal, R.E.

Parker, L. H., Captain, R.E.

Pelling, A. J., Lieut.-Colonel, R.E. (D.S.O., Military Cross).

Perry, G. A., Lieut., R.A.S.C.

Pickard, C. E., Acting-Captain, R.E.

Powell, D., Captain, R.E., Divisional Gas Officer (Military Cross).

Probert, M. E., Chief Petty Officer (Act.), R.N.

Roos, C. B., Captain, R.E.

Rudge, E. A., Corporal, R.E.

Shalleross, A., Pilot, R.F.C.

Sheldon, W., Corporal, Royal Fusiliers.

Shipston, G. T., Captain, Leicester Regiment, attd. M. of M.

Smith, F. W., Lieut., Bedfordshire Regiment, attd. M. of M.

Templeman, W. H., Captain, R.A.O.C.

Watt, J. J., Lieut., R.E.

Webb, H. W., Lieut., Royal Warwickshire Regiment.

White, J. C., Major, General List (Military Cross).

Wilson, D. M., Major, R.E. (Military Cross, Croix de Guerre, Chevalier de ΓOrdre de la Couronne).

Woodhead, A. E., Captain, R.A.M.C., attd. R.E.

### STUDENTS.

Atkinson, C., Guardsman, Machine Gun Guards.

Barber, H. H., 1st Class Mechanic, R.N.

Beck, C. W., R.A.S.C.

Beecroft, S. B., Signaller, R.N.V.R.

Brisley, C. W., Lieut., Irish Guards.

Causer, L. W., Flight-Cadet, R.A.F.

Chitty, E. C., Lieut., R.E. (Military Cross).

Farrer, W. J. G., Sapper, R.E.

Ferrier, G. S., 2nd Lieut., Labour Corps.

Fraser, F. J., Pioneer, R.E.

Gold, A. K., Air Mechanic and Engineer, R.A.F.

Goodall, G. F., Lance-Corporal, Seaforth Highlanders.

Greaves, R., Lieut., R.G.A.

MacDougall, D., Company-Quarter-Master-Sergeant, R.E.

Phillips, R. J., 1st Class Mechanic, R.N.A.S.

Phillips, S. B., Leading Mechanic, R.N.A.S.

Senior, Alan, Captain, R.F.A. (Military Cross).

Smith, D. G., Leading Mechanic, R.N. (D.S.M.).

Smith, F. W. H., 1st Class Air Mechanic R.N.

Snow, W. A., Cadet, R.E.

Southerton, L. C., 1st Class Mechanic, R.N.A.S.

Stewart, R.F., Lieut., R.F.C.

Taylor, C. B., Lieut., R.E.

Thomson, M.S., Lieut., R.A.M.C.

### The Register.

Since the publication of Proceedings, Part IV., in December, 1918, the Council have elected 15 new Fellows and 103 new Associates: 3 Associates have been elected to the Fellowship, and 12 Students have been admitted.

The deaths of 2 Fellows, 5 Associates and 3 Students have been reported.

### New Fellows.

Burford, Samuel Francis, The Ridgeway, Rothley, Leicester. [Public Analyst, Borough of Leicester; publications.]

Caines, Charles March, 12, Sheldon Road, Cricklewood, London, N.W 2 [Director, Squire & Sons, Ltd.; publications.]

Cooper, Walter Johnson, The Elms, Lavernock, nr. Penarth, South Wales-[Managing Director, British Portland Cement Co.; Research.]

Harrison, William, M.Sc. Tech. (Munc.), The University, Leeds. [Lecturer in Textile Chemistry, Leeds University; Research and publications.]

Heycock, Charles Thomas, M.A. (Cantab.), F.R.S., 3, St. Peter's Terrace, Cambridge. [Goldsmith's Reader, Cambridge University.]

Hollingworth, David Vincent, Birchenwood Collieries, Kidsgrove, Stoke-on-Trent. [Technical Adviser, Ministry of Munitions.]

Homer, Miss Annie, D.Sc. (Dub.), Lister Institute of Preventive Mediscine, Chelsea Gardens, London, S.W. 1. [Assistant, Lister Institute of Preventive Medicine; research and publications.]

Houlder, Bertram Ernest, 59, Lady Margaret Road, Southall, Middlesex. [Senior Partner and Managing Director, W. Houlder, Son, & Co.; Research.]

Kewley, James, M.A. (Cantab.), c'o The Asiatic Petroleum Co., St. Helen's Court, Great St. Helens, London, E.C. 3. [Chief Chemist, Asiatic Petroleum Co.; Published research.]

Lewin, Hugh James, Royal Clarence Yard, Gosport. [Inspector of Victualling Stores, Royal Clarence Yard, Gosport.]

MacWhirter, James, Elsinore, Milngavie, Dumbartonshire. [Chief Chemist. Beardmore & Co.]

Michie, Arthur Cumming, D.Sc. (Aberd.), 77. Rosebery Crescent, Newcastleon-Tyne. [Wallsend Laboratories; research and publications. Perman, Edgar Philip, D.Sc. (Lond.), Foxley Croft, Godstone Road, Purley, Surrey. [In charge of Research Lab., Guy's Hospital Medical School; Research and publications.]

Stephens, Frank Robert, 120, Pratt Street, London, N.W. I. [Chief Chemist, Idris Co. and Viking Food and Essence Co.; Research and publica-

ons.

Underhill, Thomas John, "Stanley," 53, Lancrost Road, Tulse Hill Park, Brixton, Lendon, S.W. 2. [Inspecting Officer, Admiralty Victualling Stores.]

### Associates Elected to Fellowship.

Cowman, Douglas Henry Bellars, B.Sc., 2, Allison Gardens, Dulwich Common, London, S.E. 21.

Hamilton, David, A.R.T.C., St. Catherine's, 31, Newlands Road, Newlands, Glasgow.

Trickett, Harold, 16, Midholm, Addison Way, Finchley, London, N.W. 4.

### Associates (by examination).

Harwood, Samuel Davenport Fairfax, The Reyal C llege, Curepip , Mauritius.

Hughes, Edwin Burnhope, The Royal College, Curepipe, Mauritius.

### Associates.

S. = Naval, Military, or Air Service. M = Munitions.

I.I. = Passed the Intermediate Examination of the Institute.

Acland, Captain Lauchlan Henry Dyke, M.C., B.A. (Oxon.). Island View, Barton-on-Sea, New Milton, Hants. [S.]

Allcott, Captain Arnold, B.Sc. (Manc.), Fernlea, Great Harwood, Lancs. [Science Master; S.]

Allpress, Charles Frederick, B.Sc. (Birm.), 6, Drayton Road, King's Heath, Birmingham. [M.; S.]

Andrews, Lionel Conrad, B.Sc. (Lond.), Cressingham House, Carshalton, Surrey. [Research Chemist, Joseph Rank, Ltd.]

Applebee, Harry Charles, 509, Edge Lane, Droylsden, Manchester. [Finsbury Tech. Coll. Certif.; 13 years' experience.]

Atkinson, Samuel Comber, B.Sc. (Lond.), 29, Gatling Road, Plumstead, London, S.E. 18. [M.]

Ault, Wilfrid Beaumont, B.Sc. (Birm.), 383, City Road, Edgbaston, Birming-ham. [Chief Chemist, W. & E. Sturge.]

Barber, Charles Frederick Lee, 12, Queen's Terrace, Otley, York. [Leeds Univ.; Chemist and Works Manager.]

Barnett, Walter Leigh, B.Sc. (Lond.), 18, Carden Road, Peckham Rye, London, S.E. 15. [Govt. Lab.]

- Barrs, Charles Edward, 58, South Hill Park, Hampstead, London, N.W. 3. [Northampton Institute; Chief Chemist, D. C. Griffith & Co.]
- Birchall, William, "Ingledene," Green End Lane, St. Helens, Lanes. [St. Helens Tech. School; Chief Chemist, Hardshaw Brook Works, United Alkali Co.]
- Bradley, George William James, 1, Garden Suburb, Park Road, Ebbw Vale, Mon. [Roy. Tech. Inst., Salford; Technical Manager, Ebbw Vale Steel, Iron and Coal Co.]
- Bruce, Robert James, 29, Foster Road, Dukes Avenue, Chiswick, London, W. 4. [S. W. Polytechnic; S.; M.]
- Chaumeton, Captain Philibert Camille, B.Sc. (Leeds), 71, Heslington Road, York, [S.]
- Clark, Francis William, B.Sc. (Lond.), 43, Braemar Avenue, London, N. 22, [Research; Dyes.]
- Clements, John Arthur, The Quintas, Spital, Chesterfield. [Sheffield Univ.; M.]
- Clifford, Joseph. A.R.C.S.I., The Government Analytical Laboratory, Cairo, Egypt. [Govt. Lab., Cairo.]
- Cook. Sidney Jabez, B.A. (Toronto), 317, Queen Street, Ottawa, Ontario, Canada. [Chemist, Inland Revenue Dept., Ottawa.]
- Coombs, Lieut. Lewis Newton, B.Sc. (Lond.), Lockerley, Romsey, Hants.
- Cowie, George Alston, M.A., B.Sc. (Aberd.), Rothamsted Experimental Station, Harpenden, Herts. [Rothamsted Experimental Station; Research.]
- Croghan, 2nd Lieut. Edward Henry, B.A. (Cantab.), c/o Dr. Smyth, 2, Lyford Road, Wandsworth Common, London, S.W. [S.]
- Crosland, Thomas Pearson Kilner, Ebor Mount, Hudderstield. [Leeds Univ. and Hull Tech. Coll.; 13 years' experience; dyes.]
- Crowther, Edward Mortimer, M.Sc. (Leeds), 2, Wordsworth Road, Harpenden, Herts. [Rothamsted Experimental Station.]
- Dewar, George, 14, James Street, Falkirk. [Roy. Tech. Coll., Glasgow; 23 years' experience.]
- Dingley, Cyril Stanley, Hill Court, Fladbury, Worcestershire. [Mun. Tech. School, Birmingham; S.; Chemist, British Cyanide Co.]
- Divon, Norman, A.M.S.T., 92, Crondall Street, Moss Side, Manchester.
  [Asst. Chemist, W. T. Glover & Co.]
- Doughty, Walter David, The Woodlands, Church Road, Bexley Heath, Kent. [6 years' evening classes; Asst. Chemist, Burt, Boulton and Haywood.]
- Ebrill, George, B.A. (R.U.I.), 22, Leeson Park Road, Dublin. [Prof. of Chemistry and Physics, Royal Veterinary College of Ireland; patents and publications.]
- Ellis, Major George William, B.Sc. (Lond.), G.H.Q., France. [S.: publications.]

Elsey, Edwin, B.Se. (Birm.), 4, Herbert Road, Southall. [Chief Chemist, London Chemical Works, Ltd.]

Evans, Percy Edwin, M.A. (Cantab.), St. Medards, 86, Chesterton Road, Cambridge. [M.]

Fairbrother, Thomas Harold, M.Sc. (Manc.), The Orms, Spring Bank, Wigan, [Research Chemist, Levinstein, Ltd.]

Farmbrough, Alfred, 259, Lewisham High Road, London, S.E. 4. [Finsbury Tech. Coll. Certif.; Acting Chief Chemist, India Office Store Depot.]

Fermer, Herbert Frederick Francis Burdett, 32, Trossachs Road, East Dulwich, London, S.E. 22. [Goldsmiths' Institute; Bacteriologist, Metropolitan Water Board.]

Fleet, William Frederick, B.Sc. (Lond.), Ivy Cottage, Hewell Road, Burnt Green, nr. Birmingham. [S.]

Freeborn, Albert, 25, Seyssel Street, Cubitt Town, London, E. 14. [East London College Day School and Goldsmiths' Institute.]

Furlong, John Ralph, Ph.D. (Wurzburg), 75. Swinderley Road, Wembley, Middlesex. [Finsbury Tech. Coll. Diploma; Imperial Institute; Research; publications.]

Gard, John Stanley Fabian, B.Sc. (Dun.), 25, Station Road, Washington, Co. Durham, [Chief Chemist, Washington Chemical Co.]

Giffen, William Edward, B.Sc. (Lond.), S. Victoria Road, Harborne, Birmingham. [M.]

Gray, Walter Stroulzer, B.Sc. Agric. (Lond.), "Robsacks." Wye, Kent. [Head of Chemical Dept., S.E. Agricultural College.]

Greenwood, Maurice. B.A. (Oxon.), 34, Clifton Terrace. Hayle, Cornwall, [M.]

Hamer, Miss Frances Mary, B.A. (Cantab.), B.Sc. (Lond.), Girton College, Cambridge, [Research.]

Hargreaves, Frank, A.R.S.M., 21, Lansdowne Street, Burnley. [M.]

Hitchins, Miss Ada Florence Remfrey, B.Sc. (Glas.), 130, Cambridge Drive, Kelvinside North, Glasgow. [M.]

Holden, Frank, B.A. (Cantab.), The Chemical Laboratory, Royal Veterinary College, Camden Town, London, N.W. 1. [M.]

Hora, Frederick Rudolph Hay, A.R.C.S., B.Sc. (Lond.), King's School, Canterbury. [Science Master.]

Hume, Captain John, B.Sc. (Edin.), 8, Wardie Crescent, Edinburgh. [8.]

Hyde, Alfred William Tovey, Wythburn, Streetly Lane, Four Oaks, Warwickshire. [Roy. Coll. of Science, London; Chemist, Dunlop Rubber Co.; Research.]

Ingham, Lieut. Frank Tinley, B.Sc. (Lond.), Middle Rasen, Market Rasen, Lines. [S.]

Johnson, John Richard, "Casita," Glencairn Road, Streatham, London, S.W. 16. [Finsbury Tech. Coll.; I.I.; Superintending Chemist, Navy and Army Canteen Board.]

- Johnson, Miss Mary, B.A. (Cantab.), Newnham College, Cambridge. [Research.]
- Jones, Osman, 5. Molineux Avenue, Broad Green, Liverpool. [Finsbury Tech, Coll.; I.I.; Chief Chemist, Calder's Margarine Co.]
- Kingsley, Harry, B.Sc. Tech. (Manc.), 165, Cheetham Hill Road, Manchester. [Asst. Chemist, Turner Bros., Asbestos Co.].
- Knox, Archibald, 18, Newhall Terrace, Greenhead, Glasgow. [Roy. Tech-Coll., Glasgow; M.]
- Lacy, Sidney Augustus de, I. Dordrecht Road, Acton, London, W. 3, [Mun. Tech. School, Birmingham; S.; M.]
- Langton, Harold McKee, B.A. (Cantab.), B.Sc. (Lond.), 23, Cranley Road, Westeliff, Southend-on-Sea. [Manager, Universal Oil Co.; publication.]
- Lefebure, Major Victor, B.Sc. (Lond.), Hotel Lapérouse, Rue Lapérouse, Paris, 16e, France. [S.; Research.]
- Lever, David, A.R.T.C., Plantation Diamond, East Bank, Demerara. [8.: Chemist, Demerara Co.]
- Lizius, Lieut, John Leonard, B.Sc. War (Lond.). 2a, King's Cross Road, London, W.C. 1. [S.]
- Lynn, Norman, 56, Richmond Mount, Headingley, Leeds. [Bradford Tech-Coll.; M.; Research and Works Chemist, Yorkshire Dyeware Co.]
- Macdonald, John Hendry, M.A., B.Sc. (Aberd.), 182, Plumstead Common Road, London, S.E. 18. [M.]
- Mandleberg, 2nd Lieut, Joseph Harold, M.A. (Cantab.), Redelyffe, Victoria Park, Manchester. [S.; Research.]
- Mann, Captain Sydney Andrew, B.Sc. (Lond.), 27, Lansdowne Road, South Woodford, Essex. [S.]
- Marsden, Arthur, 14, Argyle Street, Bath. [Tech. Coll., Derby; Chief Chemist, Bath Gas Co.]
- Mason, John Ernest, B.Sc. (Lond.), 4, Milton Villas, Woolston, Southampton. [Chemist, Ardol, Ltd.]
- Matthews, Frank, B.Sc. (Lond.), 12, Hurlingham Court Mansions, London, S.W. 6. [Chemistry Master.]
- McFadden, Alexander, B.Sc. (Glas.), 7, Gourlay Street, Springburn, Glasgow. Scotland. [S.]
- McKie, Miss Phyllis Violet, M.Sc. (Wales), Castle Bank, Bangor, N. Wales. [Research; publications.]
- McLaren, Alexander Williamson, Ramsden Dock, Barrow-in-Furnes-[Roy. Tech. Coll., Glasgow; in private practice].
- Meyrick, Thidal Francis, B.Sc. War (Lond.), 39, Manselton Road, Manselton. Swansea. [M.; Research.]
- Moore, Burrows, B.Sc. Tech. (Manc.), A.K.C., 26, Willesden Avenue, Victor. Road, Victoria Park, Manchester. [Research.]
- Moses, Abram. B.Sc. (Leeds), 117, Peabody Road, South Farnborougle, Hants. [M.]

- Myhill, Alphonse Renfred, I. Daniels Road, Little Bromwich, Birmingham.
  [Mun. Tech. School, Birmingham; Works Chemist, Nechells Gas-Works.]
- Needs, 2nd Lieut, Francis Edwin, 1, Claremont Road, Bishopston, Bristol. [S.]
- Neilson, John Francis, B.Sc. (Queensland), H. M. Factory, Queensferry, [Science Master; M.]
- Newman, Sidney Herbert, B.Sc. (Lond.), I. Rochester Avenue, Sedgley Park, Prestwich, Manchester. [M.]
- O'Callaghan, Patrick, A.R.C.S.I., 80, Chaworth Place, South Circular Road, Dublin. [S.]
- Pearce, Edmund, B.Sc. (Bris.), 13, Wemyss Road, Blackheath, London-S.E. 3. [S,; M.]
- Pollard, Captain Alfred George, B.Sc. (Lond.), A.R.C.S., 27, Edburton Avenue, Brighton, Sussex. [S.]
- Purves, George Thomson, Thirlestane, Chryston, nr. Glasgow. [Roy. Tech. Coll., Glasgow; 17 years' experience; publications.]
- Randall, Ernest Leslie, 6, Belgrave Terrace, New North Road, Huddersfield, [King's College, London; Dyes; publications.]
- Rawsthorn, Reginald Bromley, M.Sc. (Manc.), Woodfield, Stonyhurst, nr. Blackburn. [Head of Chemistry Dept., Stonyhurst College.]
- Rees, Edgar Charles, Kynoch-Arklow, Ltd., Arklow, Co. Wicklow. [Explosives Chemist.]
- Robinson, Clifford Hanks, B.A. (Toronto), Central Experimental Farm. Ottawa, Canada. [Chemist, Central Experimental Farm, Ottawa.]
- Rosebourne, Cyril, B.Sc. (Wales), The Edward Davies Chemical Laboratories,
  Aberystwyth. [M.; Research.]
- Rothwell, Bernard Paul, M.Sc. (Vict.), 30, Clyde Road, West Didsbury, Manchester. [Research Dept., Richmonds, Ltd.]
- Salt. Captain Wilfred Austin, M.C., B.Sc. Tech. (Manc.), 53, Pinnington Road, Gorton, Manchester. [S.]
- Sanders, Percy Harold, 11, Beech Road, Bournville, Birmingham. [Mun. Tech. School, Birmingham: Head Analyst, British Cyanides Co.]
- Smout, Arthur John Griffiths, Laboratory, "C" Department, Selly Oak Works, Birmingham, [Mun. Tech. School, Birmingham; Chief Chemist, Elliott's Metal Co.]
- Spilman, George Herbert, 64, Dukes Avenue, Chiswick, London, W. 4, [Hull Tech. Coll.; M.]
- Steele, Arthur Robert Victor, The Drive, Crossgates, nr. Leeds. [Goldsmiths' Coll.; S.; M.]
- Thomas, David, B.Sc. (Wales), 9, Pavilion Terrace, London, W. 12. [M.]
- Twine, William Alfred, Acien House, Hillaries Road, Gravelly Hill, Birmingham. [Mun. Tech. School, Birmingham; Superintendent of Chemical Plant, Birmingham Corporation Gas Dept.]

Vincent, John Willford, B.Sc. (Bris.), 7. Margaret's Buildings, Brook Street. Bath. [M.; Chemist, Asiatic Petroleum Co.]

Walker, Frederick Wilson, A.R.C.S. (Lond.), 89, High Street, Welling, Kent.

Walker, Richard Gaston, No. 2, Staff House, East Riggs, Dumfriesshire, Scotland. [School of Mines, Ballarat, Victoria.]

Wallace, Captain Thomas, M.C., B.Sc. (Dun.), 44, Garden Terrace, Earlsdon, Northumberland. [S.; Research.]

Watkinson, Hugh Leslie, B.A. (Cantab.), 29, Bolton Road, Walkden, Manchester. [M.]

Weir, Alexander Bertram, B.Sc. (Edin.), Duff House, Banff, Scotland, [Chemist, Duff House, Sanatorium.]

West, 2nd Lieut, Donald Willoughby Capon, A.C.G.I., Slinfold, Horsham, Sussex. [S.; Research.]

West, Lieut, Ralph Winton, A.R.C.S., 203, Casewick Road, West Norwood, London, S.E. 27. [S.]

Wilkinson, Harry, Lyndhurst, New Hey Road, Salendine Nook, Huddersfield. [Yorkshire Coll., Leeds; Head of Dept. of Dyeing, Tech. Coll., Huddersfield.]

Williams, Frederick, M.A. (Oxon.) S. Blackbank, H.M. Factory, Gretna.
[M.]

### Students.

Browne, Rupert Pollard, 7, King Street, Richmond, Surrey.

Ewing, Miss Margaret Anderson, M.A. (Aberd.), c o Macdonald, 43, Keir Street, Pollockshields, Glasgow.

Gates, Stanley Frederick, 12, Albion Square, London, E. 8.

Hoffstein, Frederick, 106, Sidney Street, Mile End, London, E. 1.

Hollingsworth, Clifford, Brooklyn, Broomfield, Road, Chadwell Heath-Essex.

Hyslop, William McNinch, Damulin, 17, Craigie Road, Ayr.

Kirkland, Miss Margaret Kerr, 5, Ellis Street, Kilmarnock.

Neal, Brian Henry, 8, Fielding Terrace, Ealing Common, W. 5.

Norman, Henry Robert Borchardt, 26, Howitt Road, Belsize Park, Hampstead, London, N.W. 3.

Sawers, Thomas Jack, Woodend, Eastwood, Giffnock, Renfrewshire.

Trotman, Edward Russell, 1, Regent St., Nottingham.

Wood, Lieut, Cecil William, 11, Macaulay Road, Clapham Common, London, S.W. 4.

### DEATHS. Fellows.

Captain Alexander Gemmell, D.Sc. (Edin.). James Nimmo.

### Associates.

Edwin Sidney Hawkins, M.Sc. (Birm.).
Thomas Stanley]Norman, M.A. (Cantab).
William Arthur Silvester, M.Sc. (Sheff.).
James Carter Spensley.[M.A. (Cape\_of\_Good\_Hope).
Captain William Currie Taylor.

### Students.

Lieut. Jesse Dell Berridge (killed in action). Captain Harold William Brooke (killed in action). Alfred James Macritchie Campbell (killed in action).

### General Notices.

**Examinations.** Candidates who desire to present themselves for examination in April or July are requested to communicate with the Registrar.

Examinations in Biological Chemistry.—The Council will be prepared to arrange for an Examination in Biological Chemistry, Bacteriology, Fermentation, and Enzyme Action to be held in October, 1919.

Notice to Associates.—Associates elected prior to February, 1916, who can produce evidence satisfactory to the Council that they have been continuously engaged in the study and practical application of chemistry for at least three years since their election to the Associateship, may obtain forms of application for election to the Fellowship.

Appointments Register.—A Register of Fellows and Associates of the Institute of Chemistry who are available for appointments is kept at the Offices of the Institute. For full information, inquiries should be addressed to the Registrar.

Fellows and Associates are invited to inform the Registrar of suitable appointments for professional chemists.

The Library.—The Library is open for the use of Fellows, Associates and Registered Students, between the hours of 10 A.M. and 6 P.M. on week-days (Saturdays: 10 A.M. to 2 P.M.), except when Examinations are being held.

The Library of the Chemical Society is likewise open for the use of Fellows and Associates of the Institute, the hours of opening being as follows: Mondays, Wednesdays and Thursdays, from 10 a.m. to 6 p.m.; Tuesdays and Fridays, from 10 a.m. to 5 p.m.; and in the evenings of those days on which the Chemical Society meets.



THE

# INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND.

FOUNDED, 1877.
INCORPORATED BY ROYAL CHARTER, 1885.

### PROCEEDINGS.

1919.

### PART II.

OFFICERS, COUNCIL AND COMMITTEES, 1919=20.
ANNUAL GENERAL MEETING, MARCH 3rd, 1919.
THE PRESIDENT'S ADDRESS.
PROCEEDINGS OF THE COUNCIL (FEBRUARY—MARCH, 1919).
ACCOUNTS FOR 1918. LOCAL SECTIONS.
THE INSTITUTE AND THE ECONOMIC INTERESTS OF CHEMISTS.
THE LIBRARY. OBITUARY.
SERVICE WITH THE FORCES: Supplementary Lists.
CHANGES IN THE REGISTER. NOTICES.

Issued under the supervision of the Proceedings Committee.

RICHARD B. PILCHER,

Registrar and Secretary

30, Russell Square, London, W.C. 1.
April, 1919.

### LIST OF OFFICERS AND COUNCIL

For the Year ending March 1st, 1920.

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SIR HERBERT JACKSON, K.B.E., F.R.S.

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#### HON. TREASURER:

EDWARD WILLIAM VOELCKER, A.R.S.M.

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BERNARD DYER, D.Sc.
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### HON. AUDITORS:

LEONARD TEMPLE THORNE, Ph.D., JAMES CONNAH, B.Sc.

### AUDITOR:

DAVID HENDERSON, Chartered Accountant.

REGISTRAR AND SECRETARY: RICHARD BERTRAM PILCHER.

ASSISTANT SECRETARY:
GEORGE STANLEY WITHERS MARLOW, B.Sc., F.I.C.

### Committees for 1919-1920.

### FINANCE COMMITTEE:

THE PRESIDENT, WITH WILLIAM BACON, OSCAR L. BRADY, W. T. BURGESS, F. H. CARR. CECIL H. CRIBB, H. G. LACELL, WILLIAM MACNAB, AND E. W. VOELCKER.\*

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### SPECIAL COMMITTEES.

### GENERAL PURPOSES COMMITTEE.

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### CHEMICAL TECHNOLOGY EXAMINATIONS BOARD.

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### SPECIAL FINANCE COMMITTEE Re BUILDINGS FUND:

THE PRESIDENT.\*

PAST PRESIDENTS: SIR GEORGE BEILBY, SIR JAMES J. DOBBIE, PERCY F. FRANKLAND, J. MILLAR THOMSON, AND SIR WILLIAM TILDEN.

VICE-PRESIDENTS: W. T. BURGESS, C. F. CROSS, G. T. MORGAN, SIR ROBERT ROBERTSON, AND GEORGE STUBBS. THE HON. TREASURER AND FINANCE COMMITTEE.

THE HOUSE COMMITTEE.

### SPECIAL COMMITTEES—(continued).

#### LECTURES COMMITTEE:

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### GLASS RESEARCH COMMITTEE:

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SPECIAL COMMITTEE Re HONORARY CORRESPONDING SECRETARIES:

THE PRESIDENT, "WITH OSCAR L. BRADY, F. G. DONNAN, A. F. JOSEPH.

A. LIVERSIDGE, WILLIAM MACNAB, D. NORTHALL-LAURIE,
E. W. VOELCKER, EDMUND WHITE, AND W. M. G. YOUNG.

#### STANDARDS COMMITTEE:

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SPECIAL COMMITTEE Re CONFERENCE ON TRAINING OF CHEMISTS:

THE PRESIDENT,\* WITH E. C. C. BALY, C. H. CRIBB, A. FINDLAY, A. HARDEN, GILBERT T. MORGAN, AND EDMUND WHITE.

METRIC COMMITTEE (to consider Report prepared by Conjoint Beard of Scientific Societies):

THE HON, TREASURER, WITH A. CHASTON CHAPMAN, J. T. DUNN, F. J. LLOYD, AND W. M. G. YOUNG.

<sup>\*</sup> CHAIRMAN.

<sup>+</sup> VICE-CHAIRMAN.

## FORTY=FIRST ANNUAL GENERAL MEETING.

FRIDAY, MARCH 3rd, 1919.

THE Forty-First Annual General Meeting of the Institute of Chemistry of Great Britain and Ireland was held at 30, Russell Square, London, W.C., on Monday, March 3rd, 1919, at 4.30 p.m.; Sir Herbert Jackson, K.B.E., President, in the Chair.

The minutes of the Fortieth Annual General Meeting having been read and confirmed, Mr. Edward William Voelcker, Honorary Treasurer, moved, Mr. H. Droop Richmond seconded —"That the Financial Statements for the year 1918 be received and adopted, and that a vote of thanks be accorded to the Auditors for their services."

The Treasurer said that since the last Annual General Meeting the Institute had had to deplore the loss not only of the late Treasurer, Mr. Gordon Salamon, but also of Sir Alexander Pedler, who had accepted an invitation to take the post of Honorary Treasurer, but whose sudden and unexpected death had deprived the Institute of his very valuable services. The choice of the Council had fallen upon him (the speaker) and he would like to take the opportunity of expressing to the Members how very highly he appreciated the honour that had been done him in asking him to occupy that position. He only regretted that his first appearance as Chancellor of the Exchequer for the Institute should have to be associated with what must be from one point of view an unpopular budget. He would only ask Members to believe that the step of increasing the annual subscription would not have been recommended by the Finance Committee unless it had been absolutely necessary. The Committee had been obliged to raise the annual subscription for the reason that the present value of money rendered it impossible to continue on the old basis with any hope of developing the work of the Institute, and as the future prosperity depended very much on the way in which the work of the Institute developed, he thought, and he hoped, that

Members would all agree that the sacrifice they were asked to make was one to which they should endeavour to respond. He was in hopes that the question could have been postponed until after the Annual Meeting, but the matter was urgent. The Finance Committee went very carefully into the subject, and made as close estimates as they possibly could of what the probable future expenditure would be. The result was that it was found that a very considerable increase over the available income under the old conditions would be absolutely necessary. He could conceive no more fatal policy than to start with inadequate means on a career of usefulness such as was laid down by the Council, and the only way in which that could be avoided was by raising the subscription. He did not want to detain the meeting long with matters of history, but if Members would refer to the financial reports for past years they would see how extremely narrow had been the margin of receipts over expenditure. From 1893 practically the whole of the income was required for maintenance. For the first few years at Bloomsbury Square the Council had considerable difficulty in making the income meet the expenditure. In 1908 a Special Financial Committee considered the question of raising the annual subscription, and, although they did not think it advisable to do so then, they pointed out that, in order to put the Institute on a really sound basis, a large increase of capital was required. At the Annual Meeting of 1910 several Members suggested that the annual subscription should be doubled. Previous to the year 1885 the annual subscription was two guineas, but in that year it was decided to reduce it to one guinea. He could not help feeling that if instead of taking this step the Council had shown the activity that was subsequently developed the position of the Institute now would be very much stronger than it was. It was very unfortunate that the four years during which the Institute had occupied the present building had coincided with the war period. That had entirely upset all calculations and rendered it impossible to make a proper comparison with previous years. In 1915 it was not possible to keep the expenditure within the receipts. Although in 1916 the position was less anxious, the need for great care for some years was clearly indicated. After 1915, owing to the war, examinations were practically suspended, and, but for the fact that the laboratories were let, the Institute would have had to face a very serious loss of revenue. In 1913 the examination fees were £1.125, while the expenses of the examinations were £832. 1914 the fees fell to £642, whereas the expenditure amounted to £714; so that in that year the Institute actually lost on the examinations. In 1915 the receipts under the heading of Laboratory and Examinations Account were £729; in 1916 £714; in 1917 £1,006; and in 1918 £932; while the expenses in those years were respectively £596, £287, £238, and last year only £88. The Institute had been fortunate in having the laboratories used by the Government during the war-not on a profiteering basis, but on an expensesharing basis. That however, would now cease, and it remained to be seen whether the examinations could be conducted on the present fees. which the Council were anxious should not press unduly on the examinees of the future. At the best it would take some time before normal conditions could be restored, so far as the examination of candidates was concerned, as, even when there was a large number of candidates to examine, the expenses were very heavy and the fees did little more than cover the costs. With regard to the use of the laboratory by Government Departments. the Ministry of Munitions Department of Explosives, whose staff left on February 28th, had offered to the Institute a considerable quantity of appa-

ratus and material which would pass into the Institute's stock, and would be very welcome. There was one item in the receipts which he had always held should not be considered as current income, namely Entrance Fees. He held strongly that those should be treated in much the same way as Life Compositions; in fact they were more strictly Capital than were Life Compositions. The Finance Committee had decided that entrance fees should be put to a reserve fund, available to be drawn upon in any emergency. The unportance of this was emphasised when the accounts for 1917 and 1918 were examined. Owing to the large increase in Members, the entrance fees in those two years were £813, and £1,005 respectively. To regard them as annual income was unsound finance. The past year had been a very anxious one, and he thought the Members must congratulate themselves on having come out as satisfactorily as they had. The large increase in the membership had brought \$400 additional receipts, but the full benefit of the increased membership would not be felt for some time. Members elected in October of any year were not required to pay a subscription for the succeeding year, and therefore 1918 had not the full benefit of the increased membership which occurred at the end of 1917. There might be perhaps a slightly exaggerated idea as to the real meaning of the increased subscriptions from new Members. Some people were rather inclined to regard subscriptions as being all profit, but this was very far from being the case. The expenses involved mounted up very rapidly. A reference to the accounts would show that the printing account had risen from £379 in 1917 to £908 in 1918. In that item alone he could see nothing but increased expense in the future, especially in view of the fact that the Institute would shortly be issuing a new copy of the Register, and this would involve more expenditure on printing. The other item which would call for increased expenditure was the question of staff. Looking at the accounts, the Members would see clearly how necessary it was to provide an increased income. The programme which was decided upon at the Extraordinary General Meeting had already involved heavy expenditure, and it would be seen that the first item on the accounts, namely " printing, stationery and office books" had risen from £379 to £908, while the item for 's salaries, wages, etc.,' had risen from £1,095 to £1,489. was absolutely impossible to carry out their programme on the limited income which the one guinea subscription provided. In the past there was no question that the Institute had only just been able to make both ends meet, and that was absolutely inconsistent with the proper carrying out of a progressive policy. He was pleased to think that, although one would naturally expect a certain number of protests to be made, those protests amounted to very few, and he thought the Institute could be congratulated on the fact that the great bulk of Members had willingly agreed to the increased tax on their resources. A considerable number of Fellows had taken advantage of the provisions made for the payment of life compositions. Since the beginning of the year the sum of £1,300 had been received on that account, and would be invested. In this connection Mr. Voelcker read a letter received from a very valued Member of the Institute, who had compounded his annual subscription -several years previously enclosing a contribution of £10 to be placed to the credit of the life composition fund because he felt that under existing circumstances he had secured his life fellowship advantageously. That, he ventured to say, was an example which he hoped some other Fellows might be tempted to follow in the interest of the common welfare of the Institute With regard to the Building Fund Account, he appealed to the Members to

get tile matter definitely settled. He had to confess to a feeling of disappointment at the response to the various appeals, especially from the younger Members of the Institute. There would be additional calls in the near future, for it would be necessary to provide for redecoration, repairs and dilapidations, as buildings could not be used for four years without undergoing a considerable amount of deterioration, and unfortunately up to the present no provision had been made from current revenue to meet that requirement. It was obvious that a considerable sum of money would have to be found to meet this outlay. Therefore he would like to ask, those Fellows and Associates who had not as yet contributed to the building fund, to see if they could not enable the Council to wipe out the liabilities which

were unfortunately much more than they ought to be.

Mr. Richmond, in seconding the Motion, expressed his personal pleasure in seeing his old friend Mr. Voelcker in charge of the finances of the Institute. He had had some experience of him as an authority on the finances of a similar body, and was bound to say that Mr. Voelcker's finance was very sound indeed, and the Institute was fortunate in having him at the head of the Financial Department. He suggested that a little more detail might be given in connection with printing, stationery and office books—how much was printing and how much stationery. A firm with which he was associated had dealt with the problem of stationery by simply using single spacing instead of double spacing in typewriting, and by remembering that paper had two sides to it: and also, by using gummed bands instead of envelopes, other economies had been made. An item which he would like to know a little more of was the increase in gas, water, electric light and power. Was that because Government Departments had used the building?

Mr. Voelcker said that was the explanation.

Mr. Richmond said he had been one of those who had strongly opposed at first the raising of the subscription, but, after looking at the accounts and after hearing what the Treasurer had to say, he felt quite satisfied that the step was necessary. He was extremely glad that the policy of investing the entrance fees had been adopted so as to form a liquid reserve.

Mr. G. J. Jones said he did not think it was good business having

printer's errors in the balance sheet.\*

The President said the accounts that were submitted to the Council were perfectly in order. The printing mistakes were unfortunate but there had been no time to deal with them.

Mr. Butterfield said he intended to move an amendment to the effect that the increased subscription be limited to Fellows and Associates elected since January 1st, 1917.

It seemed to him the funds of the Institute would have been in as satisfactory a state as hitherto if the Fellows and Associates elected since that date had paid the same examination fees as the older Fellows had done. The condition of the accounts seemed to him to be due to the fact that the Institute was now admitting Fellows and Associates on much lower terms

<sup>\*</sup> The accounts have been reprinted in this Part.

than those on which older Fellows came into the Institute. It was & question whether it was well to increase the subscription to the older Fellows, because as a matter of fact they now got very little out of the Institute, and the new movements were mainly for the benefit of the new Fellows, and for attracting more to the Institute. The work that the Institute was doing for the older Fellows was no more than formerly, and actually it would matter very little to the older Fellows whether they remained in the Institute or not. (No, no!). Their reputations were made for good or ill, and they gained very little by remaining in. He submitted that the increased cost of carrying on the Institute should be borne by those who would get the greatest measure of benefit from it. He therefore moved that the increased subscription should apply only to Fellows or Associates elected on or since January 1st, 1917.

Mr. Young said before the amendment was taken he would like to make a suggestion with regard to what fell from Mr. Jones in connection with the accounts. It seemed to him there was something in Mr. Jones's objection to having accounts which unfortunately had been mutilated by the printer but before the meeting, and he would suggest that if the auditor or auditors were present it might be desirable to have a statement from them, because it seemed to them if the auditors would inform the Members that they had gone through the accounts and they were all right it would remove the objection of Mr. Jones, who, no doubt, had perfect confidence in the auditors.

Mr. James Connah (Hon. Auditor) said it would be found on page 15 of the Report that the auditors had certified that they had examined the accounts of the Institute and found them correct. Their report was handed in to the proper officers of the Institute, and the auditors had nothing further to do with it. It was entirely a matter of printers' errors, for which the auditors were in no way responsible.

The President said that Mr. Jones's objection was one with which every one would sympathise. The Registrar, on whose shoulders such things necessarily fell, was away doing most valuable work in France, and the mistakes got in without his knowledge.

There being no seconder to Mr. Butterfield's amendment, the President put the original motion for the adoption of the Report and Accounts, which was carried unanimously.

Mr. Connah, in thanking the Members for the vote of thanks to the auditors, said that so far as Dr. Thorne and he were concerned, the work that year had been almost a sinecure, owing to the fact that the Institute had engaged the services of a professional chartered accountant—Mr. Henderson. had lightened the task of the auditors and the Institute had had the advantage of the professional auditor's experience. Mr. Henderson had made various suggestions which would be brought before the Council in due course, and which would be of benefit to the Institute if adopted. The work had been a labour of love so far as the honorary auditors were concerned.

The President nominated Mr. McHugo as one of the scrutineers to examine the voting lists for the election of officers and Council, and Mr. Hulton was nominated for the same purpose from the body of the Meeting. The voting was then taken for election of officers and Council and for election of censors.

The President moved and Sir James Dobbie seconded—"That the report of the Council for 1918—1919 be received and adopted." (See The President's Address, p. 20).

Sir James Dobbie wished in the first place to congratulate the President on the peaceful atmosphere in which he had been privileged to make his first address to the Institute-peaceful within and peaceful without. He could not help contrasting it with the conditions that existed a year ago. Fortunately all those troubles which had threatened had rolled away, and it was now possible to look back upon a year in which the Institute had enormously strengthened its position. What threatened at one time to produce disruption in the ranks of the Institute had really led to an increase in the influence of the Institute without, and had not in any way impaired the harmony of the Institute within. He would not attempt to follow the President through the various items in the Report. They were all of great interest, and formed a record of real progress. He would like to express his complete agreement with what the President had said in regard to the way in which the word "chemist" was to be understood. It was a thing that could not be too often insisted upon. He remembered many years ago when he was actively interested in the spread of agricultural education and was endeavouring to formulate courses appropriate to those who wished to assist agriculture, and especially chemistry as applied to agriculture, being told again and again "We do not want chemistry; we want agricultural chemistry." He tried to explain that there could be no agricultural chemistry without chemistry itself, that agricultural chemistry was chemistry applied to agriculture, and that it was impossible to apply what one did not possess. It was with great difficulty that he succeeded in having a thorough grounding and training in chemistry inserted in the syllabus. He knew that exactly the same difficulty prevailed in many other directions—that people confounded the application of a science in a particular direction with the science itself. In conclusion he congratulated the President upon the excellent address he had given, and expressed the hope that he would allow it, following the precedents of past years, to be printed in the Proceedings.

Dr. Aquila Forster wished to congratulate the Council on the proposed revision of the advertising policy indicated by the President's speech. A number of chemists had drawn up a document calling for an Extraordinary Meeting of the Institute in order to discuss the recent advertising policy of the Institute; the present meeting would probably give an opportunity for stating one or two points, and so save the cost and the inconvenience of calling an Extraordinary Meeting. They wished

the Institute to consider the advisability of restricting itself entirely to its function as a qualifying body. For some time past it seemed to some chemists that the Institute had adopted a somewhat indefinite policy. They had tried to carry out two functions, first their time-honoured function of acting as the qualifying body of the profession looking after the qualifications and studies of chemists-and secondly, the policy of looking after the economic welfare of the chemist. It was felt by many that those two functions were incompatible, and that they could not be carried out together with efficiency. The Charter of the Institute, in any case, would weaken and limit the activities of the Institute in so far as the economic welfare of the chemist was concerned. Some Members felt convinced that the economic welfare of the chemist could be tackled only by joint action, and the qualifying function of the Institute prevented it from gathering together a united and conjoint action independent of the qualifications of the chemist. On the other hand, it was quite clear that in order to carry out the function of a qualifying body the Institute could not at the same time take upon itself the consideration of the economic welfare of the To do so was detracting from its efficiency and activity as a qualifying body. The result was that certain Members would like to bring before the Council for their serious consideration the fact that they were looking to the Institute for a definite statement of their future policy, and they hoped that that policy would be to act as the custodians of the training, the qualification and the studies of chemists. Quite recently there had been formed a body which was now known as the National Union of Scientific Workers, the fundamental basis of which was to undertake the consideration of the economic welfare of scientific men, unbampered in any way by a consideration of qualification. He did not know how far that body at present was in a position to carry out its functions, but he did know that it was the wish of the people for whom he spoke that, when the time was tipe, the Institute should recognise the National Union of Scientific Workers. He hoped that that matter would be brought before the first meeting of the London Section, and thus brought to the attention of the Institute through the proper channels.

Mr. Lewis Eynon moved: "That this Meeting notes with regret that the Report contains no protest against the scandalous waste of qualified chemists on unskilled labour in the Special Brigade, Royal Engineers, by the military authorities."

The only reference he could find in the Report to the matter was on page 4 of the Proceedings, where it was said: "In May, 1915, in consequence of the employment of poisonous gases by the enemy as a weapon of offence, there was a sudden demand for 'men with a knowledge of chemistry,' which was largely met through the agency of the Institute." He very strongly objected to the expression "men with a knowledge of chemistry." He did not know whether Members in general knew what the work of the Special Brigade was. The men who were enlisted into it or were transferred from other units to it, were given work that could be done as well, or perhaps rather letter, by plumbers assistants. It was nearly four years since they were

first employed in that way, and as far as he was aware the Institute had made no protest whatever. The war was practically over now, but a protest should certainly have appeared in the present number of the Proceedings, if not before. If the Members of the Institute would put up with such treatment from the military authorities without protest they would deserve

that treatment.

Mr. G. Cecil Jones, in seconding the motion, said it would have been much better if one of Mr. Eynon's colleagues in the Corps could have seconded it, but although there was one in the room Mr. Evnon had asked him to second it, and he was very glad to come and do so, although it was not his business, as he had not been one of the men who was made bad use of. It was well known that men who were chemists were turned over to a job which no chemist would waste a laboratory boy on -a crossing sweeper could have done the work. Many of the men had been very sore about it. It ought not to be news to the meeting, and the Council should have known it for the past three years. He had been present at a meeting of the Public Appointments Committee, where the matter came up in an informal way, and he remembered quoting what one of the men who was transferred to the Royal Engineers had said-how he resented being taken away from other work, and put on to work which was fit for a crossing sweeper. It was a bit late, now the war was over, to criticise the War Office, but he could thoroughly understand Mr. Eynon's point of view. He sympathised with Mr. Evnon in what he felt. In moving the amendment Mr. Evnon was not censuring so much the War Office as the Council of the Institute, and because it was a vote of censure on the Council he himself had the greatest pleasure in seconding it, although he did not think there were enough in the meeting

understanding it to carry the amendment.

Mr. G. J. Jones associated himself with Dr. Aquila Forster's remarks, and the remarks of the two gentlemen who were conversant with the conditions that existed in the Gas Corps of the Royal Engineers. He put it all down to the fact that there were no business men on the Council. The quotation from the War Office circular," men with a knowledge of chemistry," proved that there were no business men on the Council. The President had said in his speech that the Council had decided to reconsider their method of advertising for a chemist at £300 a year with prospects, and he was pleased to hear that. He had been one of the objecting chemists to the matter being sent out to the Press as it appeared, and especially he objected to the Daily Chronicle representative coming to the Institute and learning from an official, " If you ask us to-day for 200 chemists at £300 a year we can let you have them to-morrow. He thought the whole of the trouble was due to the fact that not sufficient use was made of the Press, and, in his opinion, if the Institute called in a man who knew something about the psychology of advertising, and the advertisements were submitted to him before they went to the Press, there would be much greater benefits obtained from advertising. Everyone was proud of chemical industry in England; but he should like to know whether the President considered the journals he held in his hand were worthy of the profession or of the chemical industry of England. In the eyes of a neutral, those papers would be taken as typical of the industry of this country. When a neutral looked at the American journals devoted to chemistry, even a glance at the cover would make him say that he was going to have American stuff. The American papers were printed on high grade paper, as was illustrated by the "Chemical and Metallurgical Engineering," and "The Journal of Industrial and Engineering Chemistry." He would like the Council to give very serious consideration to getting the Institute to bring out an official organ on the lines of one of the American papers. He had not been to America, but he gathered from reading the journals that the American chemical industry was in a very high state of efficiency, and a neutral would think as he did, especially a South American. The Council should give their very serious consideration to bringing out a weekly journal, run by business men with an editorial staff of chemists, and printed on high grade paper, taking as a pattern some of the American papers. In that way it would be possible to raise the status of the chemist without coming forward every year to discuss the matter, and to pass resolutions about £300 a year

The President expressed sympathy with Mr. Jones, and asked whether he was speaking to the resolution or to Mr. Eynon's amendment. He thought Mr. Jones had agreed with the previous speaker who said the Institute must confine itself to granting qualifications and yet he was talking of many other things. He did not think it was necessary to hammer at an open door. Nobody denied that it would be a great advantage to have representative journals. It was obvious that many things could be improved immensely in that direction, to the good of chemists, but it was not a matter to labour before the present meeting. What had to be discussed was the

amendment before the meeting.

Mr. G. J. Jones said he supported what had been moved by Mr. Eynon,

and also what had been moved by Dr. Forster.

The President said Mr. Jones supported Dr. Forster in his views that the Institute should attend strictly to the business of a qualifying body, and not interfere in any other way with propaganda, and also supported the

motion put forward by Mr. Evnon.

Mr. G. J. Jones said Dr. Forster suggested that either one or the other should be done, that the Council should look after the professional interests of the chemists, and should say what they were going to do. He would like the Council to consider getting the Institute to issue officially a high grade chemical paper.

The President said the Registrar would take note of it, and it would be

brought to the notice of the Council.

Dr. Brady said he knew a considerable number of the Special Brigade, and he knew that many of them felt very sorely on the point that had been brought forward. Quite early in the war a leaflet was issued by the Parliamentary Recruiting Committee in which volunteers for special corps were called for, and Grade I was. " navvies, tunnellers and chemists." He drew the attention of a large number of chemical organisations to the matter, and pointed out that there was a special condition applying to Grades 2 and 3, but the condition was that those people would only be accepted if they passed the necessary trade tests. He wanted to know what was the trade test for a chemist, and also wanted to know why they were classified in that way, and whether a protest would be made. He was sorry to say that all the chemical organisations he approached in the matter were fobbed off by the War Office with the excuse that " navvies, tunnellers and chemists" were required for the Royal Engineers, but that did not do away with the question of the trade test. The Institute at that time did not protest vigorously enough against that circular. The men were given time after time practically navvying work to do that required no special knowledge whatsoever.

Captain Slade said that as he still held a commission in His Majesty's

Army he felt himself unable thoroughly to discuss the question, but he believed that, when the question of a trade test for chemists arose, the Intermediate Science examination was considered as a test, and that certain chemists were used at the depôt for examining men who had not passed such an examination, to see whether they came up to the standard. He believed that if the Institute had realised what was going on, it would have been better, for then the Institute might have conducted the trade test or abolished it. He did not suppose for a moment that the Institute as a body knew anything about it.

Dr. M. O. Forster said it did not seem to him that the presentation of the present Report was a time at which such a criticism should be urged.

All that which was being discussed arose four years ago.

Mr. Eynon said he could not raise it then because he was in the Army. Dr. M. O. Forster said the time to raise the matter was when the injustice occurred. As far as he could recollect, a great many protests were made, and he believed the Council protested to the War Office, and he believed also that a previous President, Professor Meldola or Sir James Dobbie, referred to it in strong terms in a Presidential address. He quite understood why Mr. Eynon was not able to bring the objection forward, and sympathised very strongly with him in the matter; but he still felt that the criticism could not be brought up on the Report under discussion. Perhaps the Registrar could say whether some action was not taken at the time.

The Registrar and Secretary—having been asked to make a statement said he could say something about the history of the matter from the Institute point of view. On May 12th, 1915, he received, and he believed Colleges and Universities throughout the country received, a notice from the War Office calling for "men with a knowledge of chemistry." For what purpose they were required was unknown to the Institute, and, so far as he knew, to the University and College authorities. He went to the War Office immediately, saw the officials, and promised that he would do what he could to help them. He circularised many colleges, and a large number of Members who had expressed their desire to help the country. The purpose for which the chemists were required remained a secret. Later he was frequently at the War Office while the enlistment proceeded and suggested that the men ought to have commissions. The impression given to him was that the men might not be employed as individuals, but in companies, and that it would not be possible to make every man a lieutenant. After a while he heard they were to be made corporals; a body of some 600 corporals was The War Office sent orders throughout the Army calling for men who had a knowledge of chemistry, and also transferring men whom they thought likely to be suitable for the work from units in France, with the aid of lists obtained from the Institute, the Royal Society and other bodies. It was not until after the first gas attack that any definite information with regard to the force was available. After that he had further interviews with the War Office; the force was considerably increased, and the question of qualification was discussed. The qualification was placed at a standard approaching that of the intermediate science examinations of the universities. Nothing was said at any time about the recruits being required as qualified chemists, or a high standard of knowledge being necessary-membership of the Institute, or anything of that sort—but it was regarded as safer for the men engaged with the force that they should have a knowledge of chemistry. He gathered that the men who had such a knowledge were, on the whole, better able to look to their safety than men who had not, and he knew from his own records, although there were some losses in the Corps, the Institute had not lost very heavily, and he felt that more chemists would have been lost if they had not been engaged with the Special Brigade, R.E.

Mr. Eynon said there would have been certainly more Members lost if the men transferred to the Special Brigade had remained in their original

units.

The Registrar said that was the consolation he had felt all through. Later on he was asked by the Ministry of Munitions to find chemists for H.M. Factories, and he prepared lists from which a large number of the men of the Special Brigade were selected for munitions work. Still later 30 or 40 more were brought back for research work. In that way he thought chemists had been to some extent conserved. He had always had the greatest sympathy with chemists who had been doing what they called "plumbers' work." but at the same time he had felt that the War Office authorities concerned with the matter at that time did not know sufficient about the work for which chemists were required, to understand that when they asked for men with "a knowledge of chemistry," they were not necessarily to be highly qualified men.

Mr. Evnon said they took them all.

The Registrar said that was true, but "a knowledge of chemistry" was

all they cared about.

Mr. Eynon said they did not care—they took them all. The man who was a chemist must have had some knowledge of chemistry, because the greater included the less.

The Registrar said he thought the main point was that they did not consider whether the man was a chemist, but whether he had a knowledge of chemistry, and would be better able to protect himself against possible accidents from handling such things as the Special Brigade had to handle.

Mr. Eynon said that with the usual stupidity they took men who could

have done much better in other work.

The Registrar said that between 1916 and 1917 a very considerable number were put to better work, and others were granted commissions.

The President thought it was most important that Mr. Evnon and Mr. Cecil Jones should feel definitely that there had been the greatest possible sympathy with men of training and ability whose training and ability were lost for such a long time to the service of the country. He could only say that, with the knowledge that came to him through his own students and past students, there was a considerable feeling almost of indignation at the way in which the men were being used, and vigorous protests were made. But the protestors were met by the answer as to the necessity of secrecy, and were met to a certain extent by what was hardly a justifiable argument, that it was not very much to ask a qualified chemist to do something of that kind when qualified physicists and other scientific men were "going over the top" and sacrificing their lives. There was a good deal to be said for not pushing the matter at the time, because first of all, they had no facts, and secondly, they were told it was no good to push it, and thirdly, there was a little tendency to bring before the public the idea that the chemists we e wanting to get out of the danger zone. He was sorry he could not give chapter and verse at present for the protests that were made, but there were a good many. He thought Dr. Forster had put his finger on the point. The meeting had very great sympathy with protests against the waste of talent, but he hardly thought the meeting would be in a position to pass the resolution in its present form, because the report before the

meeting was not a report on which the matter could be discussed. If at any future time the same circumstances should arise there would be something on record that would make it impossible for the same mistakes to be made. If the amendment was not passed he should not like Mr. Eynon and Mr. Jones to think that it meant that the real point of their feelings met with no great sympathy in the meeting.

Mr. Eynon said by permission of the President he would withdraw his motion.

The President said Mr. Eynon's action would be highly appreciated if he did that. There would be a record of it so that such a matter could not occur in the future, and high-class ability and valuable knowledge should not be wasted.

(The amendment was withdrawn.)

Captain Walpole said that he had not the honour to belong to that gallant Brigade of the Royal Engineers, but he had heard others talk about what they did. Quite apart from the usual dangers, there was the danger of exposure and extreme physical exertion. The Engineers could not speak of what they did, and he hoped some way would be found to enable some expressions of opinion on the matter to be made, and to record a full appreciation of the actual physical gallantry of the chemists so employed.

The President said that in the Proceedings there had been from time to time, reference to the good work of the chemists, especially the Special Brigade, R.E.\*, but it would be well to crystallise it in the way mentioned, and it would be a very good thing to see that in any future review of the war activities of chemists there should be a definite note of the splendid work which they

had done.

The Motion for the adoption of the Report by Council was then put and carried unanimously.

The President said that the scrutineers had announced that the following Censors had been elected: Sir James Johnstone Dobbie, Mr. Alfred Chaston Chapman, Dr. Bernard Dyer and Professor P. F. Frankland.

He also announced that the Council had been elected as nominated.

The President suggested that, for auditors, Dr. L. T. Thorne and Mr. James Connah should be elected again.

The Motion was carried unanimously.

<sup>\*</sup> See Proceedings, Part IV., 1915, p. 3; Part I., 1917, pp. 31—33; Part IV., 1918, p. 11; and this Part, pp. 46—47.

Mr. Voelcker proposed that Mr. David Henderson, Chartered Accountant, be elected one of the auditors, and be paid a fee of 15 guineas.

The Motion was carried.

On the motion of the President a hearty vote of thanks was accorded to the retiring members of the Council, who, he said, had given very valuable service, and he was sure that they deserved the very hearty thanks of the Meeting. The motion was seconded by Lieutenant E. S. Pemberton.

The Meeting then concluded.

### The Address of the President:

SIR HERBERT JACKSON, K.B.E., F.R.S.

Delivered at the Forty-first Annual General Meeting of the Institute,

MARCH 3rd, 1919.

In moving the adoption of the Report of the Council, I take the opportunity to refer, at the same time, to a few matters of general interest to the Institute.

You will have seen from the Report what useful service the Institute, its Members, and chemists generally, have rendered to the State during the war. The part taken by the Institute as an organised body has been one of which the members may well be proud. When the work of chemists can be realised in its true perspective, I hope that something may be done to provide a comprehensive account of their services.

The record shows that the Institute continues well to justify its existence and affords an example of the value to the country of having at its command, in times of crisis, definite and authoritative bodies of professional men of acknowledged technical ability and skill.

Last year we were able to report that twenty-nine members had received recognition from the Crown for their public services and in the present report we have the pleasure to record the honours conferred on members in yet a further twenty-two instances.

In referring briefly to the first part of the Report, I would mention that we propose to revise the pamphlet on "Reagents for Analytical Purposes," and will ask the Society of Public Analysts to co-operate with us again in that production, and also that, although the balance of the grant received from the Department of Scientific and Industrial Research has been returned to the Department, the Glass Research Committee of the Institute is still in being and is dealing with matters brought to its notice.

The activities of the Institute in the direction of enlistment are happily at an end, and in their place we are now cooperating with the Appointments Department of the Ministry of Labour in the re-settlement, in civil life, of chemists who have served with the forces. In addition we are making an effort to assist chemists who have been otherwise engaged in the service of the country to secure suitable appointments. This matter is one which requires a special effort, as it is obvious that the general status of the profession must suffer if its members are not fully employed.

I find, however, that the announcement recently made with regard to the Appointments Register has, in one particular, been the subject of criticism. This announcement, which was duly sanctioned by the Council, included the statement that "In cases where appointments at salaries of £300 a year and upwards (with prospects) are offered, a good selection of candidates may be expected." To this statement exception has been taken by some chemists who have expressed their opinions in the public press. The intention of the Council was to suggest a minimum salary at which chemists commencing their careers were prepared to apply for appointments, and, at the same time, to indicate to firms or companies applying for chemists from the Institute that salaries below \$300 were not likely in the present state of the value of money to attract qualified men even at the outset of their career. Results have shown that there has not been a misunderstanding of the statement on the part of those requiring the services of chemists for we have been notified of appointments at a much higher figure than £300, and already a good number of chemists have been satisfactorily placed. It is a little difficult to see how

with the words "and upwards (with prospects)" there is any room for misunderstanding the statement, but as an interpretation in another possible sense has been put upon it, the Council have decided to revise the method of advertising the Appointments Register.

It is a surprise to many that, in spite of the fact that there has been only a very limited output of trained chemists from our Universities and Colleges during the war, we find to-day a considerable body of qualified men and women available for appointments; but we must remember that many have been brought into active touch with the profession of their choice who had previously no suitable opportunity of practising in it, and that the losses which we sustained in the war have been less heavy than in many other callings, while a more general demand for chemists is likely to be retarded until the present restrictions with regard to foreign trade and the utilisation of capital have been removed. Within the next year or so, I believe we shall see new developments in industry of every kind, and I think that, after the lesson of the past, few can be so shortsighted as not to recognise that our science must play an increasingly important part in such developments.

Although, as I have said, our losses numerically have fortunately not been so great as might have been expected, we have to deplore the death of several distinguished chemists whom we could ill afford to spare, and of some of our younger men whose careers have closed just when they appeared to have been full of promise. Among those who have died during the past year I would like to mention especially Lieut.-Colonel Edward Frank Harrison, whom I had the honour and pleasure to know for many years. Harrison was a man of quiet and philosophic disposition; yet, despite the fact that he was above the ordinary age for fighting, he was among the first to bestir himself on the call to arms. When he was about to leave for the front, however, circumstances led to his being retained for a commission in scientific work in connection with gas defence. How well he acquitted himself you all know. The Allied

Armies had good cause to be thankful for his inventive genius and powers of organisation in devising and superintending the production of respirators for the protection of troops against poisonous gas. His high sense of duty and his enthusiasm for work led him to overtax his strength, so that he was lost to us just as his great task had been completed and the victory achieved. Many of our Fellows and Associates will be interested to hear that a fund, of which Sir George Beilby and Prof. Frankland are the Honorary treasurers, is being collected to provide a permanent memorial by which Col. Harrison's name may be appropriately perpetuated.

Another of our Fellows, and one of Colonel Harrison's colleagues, Captain Alexander Gemmell, also fell a victim to the same work, having been with the forces since the outbreak of war. Our sincere sympathy is tendered to his father, also a Fellow of the Institute, in his loss and sorrow.

It will be our duty to place in our Institute an abiding memorial to those who have fallen and this is a subject which will receive the early attention of the Council.

Next, I would refer to the loss sustained by the death of Mr. Alfred Gordon Salamon, our Hon. Treasurer, whose office while he ably guided our financial affairs brought him into intimate touch with the work of the Institute for fifteen years.

The Council had asked Sir Alexander Pedler to succeed Mr. Salamon, but to their deep regret he died suddenly before the appointment could be confirmed. Sir Alexander, who achieved distinction through a record of valuable public service in India, had always taken a keen interest in the Institute from its foundation, having been in his early days an Assistant to Sir Edward Frankland, our first President. His genial personality and his ability as a Chairman will long be remembered.

Among others whose loss we deplore I may also mention Mr. C. G. Cresswell, for many years Secretary of the Society of Chemical Industry; Mr. H. J. Helm, a past Member of Council; Prof. E. A. Letts, a past Vice-President; Prof.

Alfred Senier; Mr. F. W. Streatfeild, who will long be held in grateful remembrance by chemists trained at Finsbury Technical College; and Mr. Thomas Tyrer, one of our foremost representatives of British Chemical Industry, who is sadly missed by many friends in the Institute.

The Extraordinary General Meeting, held in April last, marked the beginning of a new era in the history of the Institute. The decisions then arrived at have given the Council a programme of work in which, notwithstanding the exigencies of war, considerable progress has been made. In the first place, the Regulations have been revised, in order to provide for the more complete organisation of the profession of chemistry, and I have no doubt that time will show that the new policy which has been adopted will prove to be in the best interests of all concerned.

The change has necessarily imposed a heavy task on the Nominations and Examinations Committee. They have worked very hard for long hours of anxious deliberation, and have dealt with a large number of applications, but there is yet a considerable accumulation left for the attention of the Committee which will be appointed by the new Council. In every case their decisions have been unanimous, and in only two cases has there been any demur with regard to any of their recommendations when they came before the Council. The result of part of their work is shown in the increase in Membership; but they have also reported to the Council on many applications for Studentship, for examination, and so forth. In the present transition stage the work is highly complicated, but we hope soon to systematise it and to devise a simpler though no less efficient method of procedure.

You will observe also that in pursuance of the programme adopted in April, the Council have added eight institutions to the list of those recognised for the training of candidates for our Examinations, and I may say that the Institutions Committee, under the Chairmanship of Dr. Harden, has now several other applications under consideration.

I feel that the Institute is taking the right line in enlarging its scope of work and broadening its policy, for no profession of any kind can hope to hold its own in the world, as we find it to-day, without proper organisation. The opportunity had come to take the long view and the Institute has grasped it. This is not the time to relax standards, but to organise the trained ability of the country for the needs of the future. We must continue to take every precaution to secure evidence of competency, and we must do everything we can to bring all qualified chemists into our body in order that they may take their part in promoting the welfare of their profession.

I do not think that many of those who had not taken steps to join the Institute before the war could have realised that a body of this kind could be of such use to them and to their country as it has undoubtedly proved in recent years. There appears to have been an impression among some who were not previously of our body that until a few years before the war the Institute was not very active and that it has been spurred to action only by the stress of the times; yet those who are most intimately acquainted with its inner history know how perseveringly the Institute had all along striven to build up this organisation. At least it could claim to have established a high standard of competency and of integrity among its members and to have attained a goodly reputation among the recognised professional bodies of this country. This, I think, is confirmed by the evidence of the desire of the chemists of the country to rally to its standard, and, with their loyal co-operation, we may look to the future with a sense of greater strength and with high hopes.

We want our Institute to constitute a real bond of Fellowship among chemists for their mutual help and general advantage, and we look to our newly formed Local Sections to foster this aim. Every member should, if possible, join a Local Section and take his part in fostering the interests of the profession in his district. The Local Sections will all be founded on much the same general lines, but each will be self-governing and free to develop its activities in its own way. On the other hand the

Council, which we hope in future will be thoroughly representative of the members both with regard to districts and branches of chemical work, will look to the sections to keep them informed on matters of local interest, and will thus be able to bring together the opinion of British chemists as a whole on all professional questions and to take such action as may be deemed advisable.

I would like to mention here also that we have been in communication with our Honorary Corresponding Secretaries in Overseas Dominions, and it is satisfactory to know there is every evidence of their desire to encourage qualified chemists in their parts of the Empire to qualify for the membership of the Institute; so that, even though they are forming local Institutes, the ties with the Home Organisation are being strengthened.

Further, in the direction of organisation, you will have heard of the formation of a Federal Council of Chemical Societies for the promotion of the interests of pure and applied chemistry. The objects of this Council are to take such action as will ensure the adequate appreciation of the due claims of chemical science; to consider all matters involving the common interests of its constituent bodies and to take appropriate action in connection therewith after consultation with any bodies more immediately concerned or identified with the matters under consideration; and to consider such references as it may from time to time receive from its constituent bodies or otherwise, and, if desirable, act thereon.

The constitution of this Council provides that the Institute should not be a constituent body, but should be associated with the Council and represented on it while remaining free as the representative professional body to carry on its duties in accordance with its charter.

That means that as an Institute we have a voice on the Council and sit on the Council, but we are unhampered in carrying on our work in the interests of our profession.

aims at the organisation of the trained and competent, and will work in every way consistent with its constitution towards the uplifting of chemistry as a profession.

We need all our energy and all our skill to maintain our claim to the full recognition that we seek. Events of the war have done much to establish that claim, but it is by continued good work that we shall succeed in holding our own in the time to come; and, when we reflect that at the present time we have on our Register nearly 1,000 Associates who have to make good their prospects of attaining the Fellowship by examination or by work of a distinctly high order, if they set themselves to the task earnestly, as, no doubt, the great majority will, we have good reason to look for steady progress in British chemistry.

I would remark, in passing, that women are coming into our profession— not in great numbers, it is true—but certainly sufficient for us to recognise that they are with us; and we know they are capable of doing excellent work. The Institute has admitted women to its membership for nearly thirty years, and we look to our women chemists also to take their part in promoting the interests of the profession as a whole. We should not be properly representative without them, and it may be predicted that in some departments of chemical work we are likely to see them employed in greater numbers than they have been in the past.

I am led to call attention to the position of the chemists in works, a subject which has been in the minds of many of us for some time. Hitherto, for reasons which need not be laboured here, chemists have had little opportunity of utilising their knowledge and skill in the actual direction and control of manufacturing operations. Some of us in the last few years have seen clear evidence, from the results of taking the chemist out of his laboratory and on to the works, of the loss to industry which has, in not a few cases, occurred in the past through restricting the chemist's activities to his laboratory and keeping him in ignorance of the methods and practice

which his constructive and critical scientific ability could so greatly have improved.

In the course of the war many chemists have gained most valuable knowledge of chemical operations on the large scale and of plant management. It is to be hoped that manufacturers will become increasingly aware of the great benefits to be obtained by enlarging the scope of such chemists' work and giving them the fullest opportunities to guide and supervise. This brings me to a brief consideration of the training of future chemists.

Now, although our Regulations provide a general idea of the length of the course and some details of the actual curriculum which we regard as necessary for the preparation of a chemist for professional life, there is still a doubt, in the minds of some of us, as to whether we have yet formulated sufficiently the whole problem of the training of chemists. This is essentially part of the duty imposed on the Institute by its Charter, to take its part in evolving the system of training most beneficial to the chemist of the future.

Clearly this cannot be done without the co-operation of the professors and teachers throughout the country, as well as of the practitioners in all branches of the profession. The whole subject requires most thoroughly sifting, and I would mention, therefore, that, arising from a letter lately received from Professor Findlay, the Council have appointed a special committee to arrange a conference for its consideration.

In the first place, we have to determine at this stage what we really mean by a *chemist*. I, for one, would be glad if we could see some way of eliminating the qualifying adjectives—analytical, research, technological and the like. I do not wish to be misunderstood in this statement. I do not mean that chemists should not become known as specially skilled in analytical, research, technological, etc., work. They must of course become so recognised and identified by their work with a particular aspect of the profession. The Institute aims at being the qualifying body to "hall-mark" a man as a chemist and a professional man, and we want, before all things, to establish

firmly the principle that a qualified chemist is a man who has been trained so broadly that he is sufficiently equipped to take up work in any relevant direction in which he may be called upon to exercise his scientific knowledge and ability, and we should strive to get away from the idea that our work must necessarily be divided into highly specialised departments. We want to establish definitely our title, and to maintain it in such a way that the general community will be forced to recognise what we are. What chemist is willing to admit, if he is a thorough chemist, that he is not a research chemist? What chemist if he is really trained would admit that he could do no analysis? It would be a pity if we did not realise that the whole value of a chemist depends very much on whether he has broad enough outlook to fit himself for any branch of chemical work when called upon so to do. From the beginning he should have that wider horizon which will make him a great deal more valuable and certainly of a great deal more value in industry.

This is hardly the occasion to enter into a lengthy consideration of the possible effects of any exaggeration of the tendency towards narrow specialisation of which there are some signs, until we have had opportunities of conferences and discussions on the whole matter.

You will have seen in the Proceedings a rough outline of the proposed new constitution of the Council of the Institute. When we have formed a London Section, which I hope will be in the near future—probably on March 14—and have discussed the scheme here, the revision of the bye-laws will be taken in hand; not only, however, with regard to the new scheme for the election of the Council, but *generally*. The revised bye-laws will, of course, be submitted to the Members and must be approved by the Privy Council, before adoption.

The Institute, therefore, in common with many other Institutions has before it a period of reconstruction, and the Council will look to the members to assist them in this work.

To effect this reconstruction, certain changes will be necessary, and one has already been put into operation. There are,

I know, a few members who feel aggrieved that the change in the amount of the annual subscription was made by the Council without calling a General Meeting to consider the matter. I venture to submit, however, that the explanation made in the circular issued in December last showed that it was obviously impossible for us under existing circumstances to continue our work on the pre-war basis. The present value of money, quite apart from our desire to develop the usefulness of the Institute in the general interest, rendered it impracticable to attempt to carry on our business without additional income. We have been working under considerable stress and with a staff-except the Registrar and the Chief Clerk—new to our work, who have not the less loyally devoted themselves to our affairs. Two of our clerks who have been serving with the forces will return to us, however, and we hope in a short while to be able to make arrangements for carrying on the increasing work of the Institute without difficulty. It has been clearly demonstrated that the work of the Institute has been growing beyond the powers of a single officer, and I think you will agree that it is remarkable that, under existing arrangements, so much has been done in spite of the strain of the last few years. Additional help is obviously necessary, and we are proceeding, therefore, to appoint an Assistant Secretary, who must be a member of the Institute, to afford some relief to our executive officer in order that he may be more free to devote himself to the larger interests of the Institute and not have to spend his time on so many details.

You will have noticed also that a General Purposes Committee has been appointed to deal with all questions of general policy in order that our aims may be kept always in view and definitely pursued.

I will refer now to other parts of the report.

The acceptance of the position of Honorary Treasurer by Mr. Edward William Voelcker is a matter of much satisfaction to the Council, as I am sure it is to the members generally. He has come into office at a critical moment; but the financial affairs of the Institute could hardly be under safer guidance,

and Mr. Voelcker has faced the situation with sound judgment and foresight.

The loan from the Bankers in respect of the Building Fund has been entirely paid off, so that the debt is now a matter between the General Account and the Fund which we hope will be settled in the near future. I am glad to say that some of our new members have subscribed to the fund and we are grateful for their help. We hope, however, that many others will add their names to the list of contributors before it is closed.

While the premises of the Institute have been so fully occupied, there has been much difficulty in carrying out repairs. The House Committee has not been in a position to put the necessary work in hand, but we hope to complete the equipment and re-decorate the building during the present year. I am glad, therefore, that there is every prospect that the Chairman of the Committee, Mr. Stubbs, who has been nominated as a Vice-President, will be able to take the matter in hand. We hope, also, in the near future, to resume examinations and to continue the Lectures Scheme.

During the war our Library has been of much use to the chemists engaged in the laboratories on Government work, and has also been increasingly used by members and students. We hope to make it still more useful during the present year and to provide especially a good supply of standard books of reference for the use of candidates at our examinations. At the same time, we have agreed to subscribe to the Chemical Society in return for the privilege of the use of its library by any Fellows or Associates who may not at present be members of both bodies. As other Societies and Institutions are cooperating in the same way, we may expect to find the collection at Burlington House being steadily improved for the benefit of all concerned.

The Public Appointments Committee, under the chairmanship of Mr. Chaston Chapman, has done much useful work, which has been of direct benefit to the profession, and particularly to those members who hold public appointments.

Among other subjects to which they have given their con-

sideration is that of the Government Chemical Service. A scheme has been brought to the notice of all Government Departments concerned. It will also be forwarded to Members of Parliament and otherwise widely circulated. We hope, therefore, to be able to follow the matter up and, at a suitable opportunity, to see some development in the direction we have advocated.

I think we should not let this opportunity pass without recalling the evidence given by the representatives of the Institute before the Royal Commission on the Civil Service in 1912. when special reference was made to the unsatisfactory conditions attaching to the appointment of chemists under the War Office. In the memorial presented to the Royal Commission we directed attention to the vital importance of chemists in matters connected with war. The truth of the statement has been borne out during the war, and I think it must be agreed that the attitude taken up by the Institute at that time has been distinctly justified. This importance has been duly demonstrated, and I hope the Government departments concerned will not overlook the matter. The scheme which we have formulated should assist them to place the public chemical service on a proper basis, having regard to the advisability of attracting to it a due proportion of the best talent of the country, not so much in an honorary capacity but on the permanent establishment.

The Proceedings Committee, too, has provided the members with as much information as possible under the prevailing restrictions. We have to thank Mr. Horatio Ballantyne, who has filled the office of Chairman of the Committee, not only for his services in that connection, but also for his able representation of the interests of chemists in connection with the Deputation of Technical Institutions to the Board of Trade on the provisions of the proposed Patents and Designs Bill.

In conclusion. I wish to take this opportunity of expressing my thanks to all the members of the Council for the way in which they have made my duties as President always easy and pleasurable to perform. To those who are leaving the Council I tender my own best thanks for their valuable services.

At this time, while the memory of the strain of the war is still fresh, I desire to remind you of the exceptional manner in which the Registrar and Secretary has thrown himself into the work which the Institute has done for the nation, and has devoted himself to the furtherance of its activity as a professional body.

I should also like to refer to the loyal, unsparing, and successful efforts, on the part of Miss Cawston, the Chief Clerk, in helping in every possible way.

### THE INSTITUTE OF CHEMISTRY

Founded, 1877.

#### STATEMENT OF RECEIPTS AND EXPENDITURE

	GENER	RAL
1917.	RECEIPTS. £ s. d. £ s.	. d.
	Balance at Bank on the 31st	
£137 6 5	Dec., 1917 320	4 10
	Subscriptions—	
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Incorporated by Royal Charter, 1885.

FOR THE YEAR ENDED DECEMBER 31st, 1918.

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162 7 3	Repairs and Furnishing	179	12	9
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STATEMENT OF ASSETS AND LIABILITIES, Dec. 31st, 1918.

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# INSTITUTE OF CHEMISTRY BUILDING FUND.

STATEMENT OF RECEIPTS AND EXPENDITURE SINCE THE OPENING OF BUILDING FUND A/C, 1909-1918.

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# Proceedings of the Council.

FEBRUARY-MARCH, 1919.

Appointment of Committees.—The Council elected on March 3rd held their first meeting on March 14th and appointed the Standing and Special Committees with their respective Chairmen (pp. 4—6).

Public Appointments Committee.— On the recommendation of the Public Appointments Committee, the Council have been in communication with various authorities on matters of professional interest.

GOVERNMENT CHEMICAL SERVICE.—As the result of correspondence with the Minister of Munitions regarding the representations made by chemists employed by the Ministry, the Council have been informed that while he is in general sympathy with those representations and with the efforts of the Council of the Institute towards the improvement of the future status of chemists in the Government Service, the question is not one which the Ministry can independently pursue. The Minister has stated, however, that the Memorandum of the Council on a suggested scheme for a Government Chemical Service is receiving the consideration of the Civil Service Commission and the Department of Scientific and Industrial Research.

The Council have communicated with the Treasury and Admiralty with reference to certain appointments under the latter Department, directing attention to the importance of appointing properly qualified chemists with adequate status, remuneration and prospects, in order that the positions may

be attractive to those who are competent to render efficient service to the State.

SUBSIDISED COMPETITION.—The Council have also been in communication with the Board of Agriculture and Fisheries with regard to a College undertaking analytical work in competition with private practitioners, and with a Local Authority on the question of subsidising official agricultural analysts to the disadvantage of chemists practising in the same neighbourhood.

With reference to the correspondence between the Institute and the City of Birmingham Gas Department, to which reference was made in Proceedings, Part IV., 1918, Prof. Frankland has forwarded a letter from the Chairman of the Gas Committee, enclosing a copy of a printed slip which is being inserted in the pamphlet to which the Institute took exception. The slip is printed as follows:—

"It should be understood that the Laboratory has been instituted to assist manufacturers in work of investigation and research, and it is not proposed to undertake ordinary analytical work usually performed by Consulting Chemsts."

MINISTRY OF HEALTH BILL.—A Joint Committee, consisting of the Public Appointments Committee of the Institute and representatives of the Society of Public Analysts has given careful consideration to the Ministry of Health Bill. and has recommended that a Consultative Committee should be appointed to deal with chemical matters affecting the public health. The Joint Committee, with the concurrence of the Councils of the Institute and the Society, has directed attention to the importance of chemical science in connection with the control of the purity of Food and Drugs (Sale of Food and Drugs Acts, 1875—1907), the control of Water Supplies, the treatment and disposal of sewage and trade refuse, the examination and control of Disinfectants, the control of Gas Supply, and the detection of Poisons in criminal and other cases. The Joint Committee has suggested that the proposed Consultative Committee should include representatives of the Institute of Chemistry and of the Society of Public Analysts, should be established to advise the Ministry on all matters on which chemistry has a bearing, and should have direct access to the Minister of Health; further, that one of the Members of the proposed Board to be nominated by the Secretary for Scotland in this connection, should be a qualified professional chemist. The Joint Committee have the co-operation of the Edinburgh and East of Scotland Section of the Institute in this matter.

A Sub-Committee has had under consideration the reforms necessary in the laws relating to adulteration and in their administration.

Army Certificate Examination.—The Council have considered a letter from the War Office enquiring whether they are prepared to accept the Special Army Certificate which has been instituted to take the place of the Matriculation Examination, as evidence of having passed an approved Preliminary Examination. The Council decided that the Special Army Certificate should be so accepted, and informed the War Office that they would consider on their merits applications from any candidates whose education had been interrupted by war service.

Resettlement of Officers and Men of Like Standing.—The Institute has actively assisted the Appointments Department of the Ministry of Labour, both in advising Students whose training has been interrupted by service with the forces and in securing appointments for qualified chemists on demobilisation.

The Council have received from the Registrar a report on his work with the Civilian Advisory Boards, engaged in France and Italy during January and February, in connection with the resettlement in civil life of officers and men of like education and standing.

A considerable number of students who have been several years in the Army evince some reluctance to continue their training; but they have been advised that their chances

of future success are largely dependent on proper preparation and qualification. In suitable cases, where such students do not possess sufficient funds for the purpose, the Government will provide financial assistance for training fees and maintenance, especially where the applicant has already attained a good standard and is likely to prove a valuable asset to the country. Applications for grants will be decided by Selective Committees working in conjunction with Advisory Boards in each of eleven districts of Great Britain and Ireland. The Institute has nominated representatives to serve on these Selective Committees.

The Council learn that the work of the Civilian Advisory Boards abroad was decidedly useful, and is likely to have an effect far beyond the men actually interviewed. The number of officers and men of like standing who had not definite occupations to return to or some definite aim in life was found to be smaller than had been anticipated; but there still remains a distinct need for an endeavour to be made by every organisation and every individual who has the means and influence to assist in the process of replacing in civilian life those who have faced hardships and dangers in the service of their country.

The Institute has been asked by the Appointments Department of the Ministry of Labour whether any concessions with respect to training and examinations can be allowed to those whose training has been interrupted by service with the forces, and who wish to obtain professional qualifications.

The Department has been informed:-

- That the Council of the Institute will consider on their individual merits applications from officers and men of like standing who have been prevented from passing an approved preliminary examination, on producing letters from the headmasters of their respective schools.
- 2) That election to the Associateship of the Institute is very largely dependent on the candidate obtaining a degree with first or second-class honours in Chemistry,

or a diploma recognised in lieu of such degree, such as A.R.C.S. (London or Ireland), A.C.G.I., etc.; that candidates who have obtained such a degree or diploma, before or during the war, are entitled to apply for the Associateship of the Institute; that in the consideration of such applications the Council are largely guided by the advice of the professors under whom the chemists have been trained, and of companies and firms with whom they have been engaged.

(3) That the cases of candidates who are not graduates, but who nevertheless have been adequately trained and have been engaged in the profession for seven years, are considered on their merits.

(4) That candidates who have been trained in accordance with the Regulations, but have not obtained degrees or other recognised diplomas, may apply for admission to the Examination for the Associateship.

(5) That, with regard to a suggestion made by the Appointments Department that "something in the nature of an intensive course could be afforded," the Council deem it inadvisable, in the interests of the candidates themselves and the public, to lower the standard of education and training required for the Associateship and Fellowship of the Institute; but that the Council will give every consideration possible to any application received from an officer, or man of like standing, who has been serving the country, having due regard to recommendations received from the Universities and Colleges.

The Registrar, as the representative of the Institute on the Resettlement of Officers Committee, attended with the representatives of other professional bodies a Conference held by the Appointments Department, at St. Ermin's Hotel, Westminster, on March 20th, when matters such as those referred to above were generally discussed.

The Department asked that the concessions offered by the

professional bodies should be made known to all who are likely to be interested, that professional examinations should be held frequently, and every possible step taken to assist in the work of resettlement.

Over 2,000 chemists and chemical students are known to have served with the forces. Their names have been cardindexed by the Chemical Warfare Committee and copies of the list have been prepared in the office of the Institute. A large proportion have already returned to civil life and training; many, in fact, had been transferred to munitions work, etc., during the progress of the war.

The Registrar has received a letter from the Minister of Labour thanking him for his share in the work of the Civilian Advisory Boards.

Appointments Register.—The lists of appointments issued by the Institute have lately been available to many Members and other chemists who have been serving with the forces. A considerable number of vacancies have been filled, and the terms offered have shown a tendency towards improvement.

The Council have received a recommendation from a Local Section to the effect that no appointment should be included in the list without mention of the minimum salary offered, but the Council did not deem it in the best interests of the Members to adopt the proposal.

Ministry of Munitions: Department of Explosives Supply.—The Council have tendered the thanks of the Institute to the Department of Explosives Supply of the Ministry of Munitions for the gift of a considerable quantity of useful apparatus and materials left in the laboratories of the Institute which have been used for the purposes of the Department during the war.

The Late Sir Alexander Pedler, C.I.E., F.R.S.— The Council learn that under the will of the late Sir Alexander Pedler the Institute, with the Royal Society, the Chemical Society, and the British Science Guild, will eventually benefit from a reversionary interest in a part of the estate. The four Societies are to share equally at the time of the distribution of the deferred legacies in one-fourth part of the testator's English and unsettled Indian estates—the amount likely to accrue to the Institute being approximately £4,000. The four Societies, moreover, are given a contingent interest in the remaining shares into which the estate has been divided for eventual distribution. The only condition attached to the bequest is "that such money be used by each of these four Societies at their discretion for the advancement of science, and as far as possible for the advancement of Chemical Science."

The kind thought for the Institute adds to the Institute's debt of gratitude to Sir Alexander, who was an Original Fellow, and had always maintained a keen interest in the affairs of the Institute.

Appointment of Assistant Secretary.—The Council have appointed Mr. George Stanley Withers Marlow as Assistant Secretary of the Institute.

Mr. Marlow was educated at New College School, Oxford, and Rutlish School, Merton. He received his training in chemistry at King's College, London, graduated as B.Sc. (Lond.: with honours in Chemistry in 1909, and passed the Final Examination for the Associateship of the Institute in 1910. After two years' experience with Mr. Edward Hinks, he entered the Government Laboratory, and was subsequently appointed, after competitive examination, to the permanent staff. During the war he has been engaged in important and responsible work in connection with the examination of food supplies for the Expeditionary Forces.

Death of Mr. Thomas Fairley.—The Council record with much regret the death of Mr. Thomas Fairley, of Leeds. Mr. Fairley served as a Member of the Council from 1887 to 1800, as Vice-President from 1896—1899 and 1901—1904, and was an Examiner during the years 1892—1895.

Death of Sir William Crookes.—The Council greatly regret to record the death of Sir William Crookes, O.M., F.R.S., an Original Fellow and a member of the first Council of the Institute.

Science in Modern Warfare.—Sir Douglas Haig, Commander-in-Chief of the British Armies in France, in his final dispatch, dated March 21st, and published by the War Office on April 10th, commenting briefly upon certain general features of operations carried out under his command, mentions factors peculiar to modern warfare which made for the inflation of losses, and refers especially to the number and variety of mechanical contrivances employed. The following paragraph is quoted as of interest to chemists:

"Besides the great increase in mobility made possible by the development of motor transport, heavy artillery. trench mortars, machine guns, aeroplanes, tanks, gas and barbed wire have, in their several spheres of action, played very prominent parts in operations, and as a whole have given greater driving power to war. The belligerent possessing a preponderance of such mechanical contrivances has found himself in a very favourable position as compared with his less well-provided opponent. The general superiority of the Allies in this direction during the concluding stages of the recent struggle, undoubtedly contributed powerfully to their success. In this respect the Army owes a great debt to science, and to the distinguished scientific men who placed their learning and skill at the disposal of their country."

The Commander-in-Chief shows, however, that the services referred to do not in themselves possess the power to obtain a decision, and that their real function is to enable the infantry to get to grips with their opponents. They are dependent for their most effective use upon the closest possible association with other arms, and, in particular, with the infantry and

artillery. "Their true rôle is that of assisting the infantryman, which they have done in the most admirable manner."

Other matters of interest to chemists, to which reference is made, include: the great development of air photography; the use of smoke shells for covering the advance of infantry and masking the enemy's positions: new forms of gas shells; the invention of a new fuse, known as "ro6"; the Inland Water Transport: the supply of rations; the utilisation of the resources of science in the prevention of disease; schools for instruction in anti-gas precautions, and training camps for gas personnel.

Under "Thanks to Commanders and Staffs," further mention is made of the Gas Services:

"The steady increase in the effectiveness of gas as a weapon of offence is largely to be attributed to the able work of my Director of Gas Services, Brigadier-General C. H. Foulkes."

In conclusion, the Commander-in-Chief acknowledges, with gratitude, the work of the "Ministry of Munitions, by whose efforts, in conjunction with those of the Governments of the Dominions, the working power and resources of the whole Empire were so rapidly developed and co-ordinated for the more vigorous prosecution of the war. The record of what they accomplished in the space of four and a half years is indeed stupendous. If the Army may justly be proud of a great victory, gallantly won at the end of an uphill fight, we have good reason to be thankful, too, for their devoted and patriotic work, which alone made it possible to continue the struggle until a successful conclusion had been reached."

Professional Institutes.—In Proceedings, Part IV., 1918, pp. 12 and 13, reference was made to a case bearing on the protection of the qualifications of Chartered Professional Institutions. The case went to the Court of Appeal, and the decision of Mr. Justice Eve, in favour of the Institute of Chartered Accountants, who sought to restrain the use of the words "Honours Final. Institute of Chartered Accountants" by an ex-Fellow of that Institute, was upheld.

## Local Sections.

The London and South-Eastern Section of the Institute of Chemistry was formed at a Meeting held at

30, Russell Square, on March 14th.

Sir Herbert Jackson, President, in opening the proceedings, said that the Local Sections recently formed in various parts of the country had already demonstrated their usefulness and were taking an active part in assisting the Council in promoting the interests of the Institute and the profession. The Council desired that the Local Sections should have a free hand in the conduct of their business. The President therefore called upon the Members to elect a Chairman for the Meeting.

Dr. Bernard Dyer having been elected to the Chair, the Section was declared duly formed. A Committee was elected

as follows :-

Mr. C. T. Abell, Dr. O. L. Brady, Mr. A. J. Chapman, Miss E. M. Chatt, Dr. Bernard Dyer, Mr. A. V. Elsden, Mr. Norman Evers, Mr. J. A. Gardner, Mr. C. S. Garland, Dr. W. H. Gibson, Mr. J. B. P. Harrison, Mr. E. M. Hawkins, Prof. J. W. Hinchley, Prof. P. H. Kirkaldy, Mr. F. H. Lees, Mr. T. Macara, Mr. W. A. C. Newman, Mr. F. M. Potter, Mr. F. M. Ray, and Mr. J. Miln Thomson.

Mr. William Bacon was appointed Hon. Secretary, pro tem.
The draft rules for Local Sections were provisionally adopted and a general discussion ensued on the proposed revision of the Bye-laws for the election of the Council of the Institute.

Newcastle and North-East Coast Section.—At a Meeting of Fellows and Associates of the Institute of Chemistry,

held at Milbum House Café, Newcastle-upon-Tyne, it was decided to form a Local Section. Prof. P. Phillips Bedson presided, and the Registrar of the Institute was also present. A Committee was appointed consisting of Prof. Bedson, Dr. J. T. Dunn, Prof. Henry Louis, Mr. R. A. Moore, Mr. C. H. Ridsdale, and Mr. Thomas Wallace. The Committee was empowered to add three to their number, and Dr. Dunn was appointed Hon. Secretary pro tem. The draft rules for Local Sections of the Institute were discussed and approved, as was also the suggested scheme for the revision of the Bye-laws for the election of the Council of the Institute.

The Local Sections have been in constant touch with the Council with reference to many matters, and it is hoped, in future, to maintain in the Proceedings a record of their activities. (See p. 69.)

# The Institute and the Economic Interests of Chemists.

The Institute, from its foundation, has striven to create and maintain a body of trained and competent chemists for the practice of their science as a profession, the members being guided by the same lines of conduct as obtain in other learned professions and by a sense of mutual responsibility to one another and to the public in all that relates to their profession.

While the Institute is incorporated under Royal Charter in the public interest, it takes action to promote the interests of its Fellows and Associates in every way its constitution allows; but, because it serves the public, the Institute looks in return to public authority and to the community to acknowledge and recognise the proper status of the chemist. By insisting on adequate training, proof of competence and a high standard of professional conduct, it has been laying the foundation, and fostering the recognition by the public, of the profession of chemistry, and working, therefore, to safeguard the public by ensuring that the title *chemist* shall signify a competent person who practises chemistry in any of its branches in a professional capacity.

The Institute recognises that questions of material reward must be bound up with its duties to its members and to the public. It is impossible to ignore the fact that the status of the professional man must be dependent upon the salary or fees which he receives. Therefore, as the Institute hopes to raise and to maintain the status of the chemist, it must take the economic aspect into consideration on certain broad

general lines. It has been regarded as part of its duty to call attention to marked instances of the offer of inadequate remuneration or of other unsatisfactory conditions for official appointments, whether in Government, Municipal or other public employ, or to instances of undue interference by Municipal or other public authorities with the independent practice of the profession of chemistry. Further, where there is evidence of a general tendency to under-rate the value of the services of the chemist, the Institute has endeavoured by constitutional means to secure the readjustment of unsatisfactory conditions.

The Institute is able to deal effectively with some of these matters in connection with the management of its Appointments Register, the use of which is available to authorities, companies and firms which seek the services of chemists. When vacancies occur and are brought to the notice of the Institute, they are notified to members whose names have been placed on the Appointments Register. Should the terms and conditions of appointment not appear to be satisfactory, steps are taken to induce the prospective principals to improve the conditions, in order that they may secure a better selection of candidates for the appointments. This policy has been pursued for many years, and the conditions have been gradually improved. The Institute cannot dictate to such principals the terms they shall offer for the services of those whom they propose to employ; but it can and does exert considerable influence by advice and propaganda.

The Institute maintains that its qualifications are intended to "hall-mark" chemists as distinct from those technical workers, who, though possessing knowledge of certain processes which are rightly called chemical, do not possess the general and scientific equipment which would justify the Council in electing them to the membership. For the Institute to be specially concerned with the economic interests of such workers, except by encouraging them to qualify by higher training for a proper professional status, would stultify its past actions and seriously imperil its endeavours to secure the public

recognition which should be accorded to qualified professional men.

Realising the importance of organising the fully qualified chemists, the Institute has modified its regulations in such a way that it is open to any properly trained and competent candidate to make good his claim for admission, at least to the Associateship. The result has shown that there is an earnest desire on the part of chemists who have reached the requisite standard to join the Institute and support its work. It will be seen, therefore, that the Institute maintains its policy of promoting the proper education and training of aspirants to the profession, of registering only the properly trained and competent, and of creating among them a sense of mutual responsibility and corporate feeling, bearing in mind that the interests of the profession and those of the public are mutually interdependent.

While the Institute has shown that it recognises clearly that the Universities produce men fit to be considered as qualified chemists, it feels at the same time that, as a body which can give expression to the knowledge and experience possessed by chemists as a whole, it is able to form a consensus of opinion which can hardly be obtained in any other way. Because it can bring chemists together and thereby create a corporate spirit among them, foster the common interests of the profession, and, by building up proper traditions, ensure their due recognition, its efforts are worthy of the full support of its members, who, after all, themselves constitute the Institute.

# The Library.

Since the issue of the Proceedings for 1918, Part II., the Library Committee have had much pleasure in acknowledging the following gifts:—

CAMPBELL, ANDREW, F.I.C.:

Petroleum Refining. Andrew Campbell. London, 1918.

HILGER, ADAM, LTD.:

Tables of Refractive Indices. Vol. I.: Essential Oils. Compiled by R. Kanthak. Edited by J. N. Goldsmith, Ph.D., M.Sc., F.I.C. London, 1918.

KINCH, PROF. E., F.I.C.:

Science Abstracts. Vol. XXI., Parts 1 to 12 and Index. London, 1918.

KINGZETT, C. T., F.I.C. :

Chemistry for Beginners. C. T. Kingzett, F.I.C. 3rd Edition. London, 1918.

Nature's Hygiene and Sanitary Chemistry. C. T. Kingzett, F.I.C. London, 1918.

MEADE, ALWYNE:

Modern Gasworks Practice. Alwyne Meade. London, 1918.

Mersey and Irwell Committee and Ribbee Joint Committee: Proceedings, 1917—18. Preston, 1918.

MINISTRY OF MUNITIONS:

Ministry of Munitions Journal. Nos. 1 to 25. London, 1916-18.

SANDERSON, JOHN, F.I.C.:

English and American Scientific Journals.

SPIELMANN, PERCY E., Ph.D., B.Sc., A.R.C.S., F.I.C.:

Some Constituents of Coal Tar and their Properties. Percy E. Speilmann. London, 1918.

Tables of Chemical and Physical Constants. Percy E. Spielmann, Ph.D., B.Sc., A.R.C.S., F.I.C., and E. G. G. Wheeler, B.Sc., F.I.C. London, 1918.

WARNES, A. R.:

Coal Tar Distillation and Working up of Tar Products. A. R. Warnes. London, 1917.

The Committee have also received a considerable number of pamphlets and reprints.

#### Journals, etc., Wanted.

The Library Committee will be greatly obliged by gifts of any of the following, which are needed to complete sets:—

Publication.	Wanted.
The Analyst	Vols. 3 and 4.
The Chemical News	Vol. 28; many numbers of Vols. 29 and 30.
The Chemical Trade Journal	No. 610.
Chemiker-Zeitung	Vols. 1—17, inclusive.
Chemisches Zentralblatt	The first four series, and Vols. 1—5 inclusive, of the 5th series.
Comptes Rendus	From commencement to 1877 inclusive, and 1894 onwards.
Journal of the Board of	
Agriculture	Part 2 of Vol. 2 to April, 1905, inclusive.
Journal of the Institute of	
Brewing	1898 (Nos. for January and March); 1899 (Nos. for February and December).
Journal of the Royal Society	
of Arts	Many early volumes and parts before 1886.
Metallurgical and Chemical	
Engineering	Vols. 1—4 of the Metallographist, inclusive.
Nature	Vol. 62.
Proceedings of the Royal	
Society	Vols. 1—12 (1862), and Vol. 25 (1876) onwards.
Zeitschrift für angewandte	
Chemie	From commencement to 1898; and 1901.

The Library Committee look to the Fellows and Associates for the continuance of their generous support.

# Obituary.

LIEUT. JESSE DELL BERRIDGE, M.C., a Registered Student of the Institute, was killed in action near Arras on May 24th, 1918, in his twenty-second year. He was educated at Colchester Grammar School and at Christ's Hospital, where he won the Wilcox Gold Medal for Chemistry. He entered King's College, London, and had passed the Intermediate Science Examination of London University before the outbreak of war. Having previously joined the O.T.C., he received a commission in the 10th South Lancashire Regiment in March, 1915, and was transferred to the R.E. in July, 1915. He was wounded in December, 1915, and again in July, 1916, and was awarded the Military Cross in January, 1918.

Captain Harold William Brooke, a Registered Student of the Institute, was killed on active service in 1918, in his twenty-seventh year. He received his general education at Cockburn High School, Leeds, proceeding to Leeds University in 1910. At the time of his death he was serving with the East Yorkshire Regiment.

ALFRED JAMES MACRITCHIE CAMPBELL was killed in action in France on June 10th, 1918, in his twenty-third year. Educated at Hillhead High School, Glasgow, he entered the Royal Technical College for his scientific training and became registered as a Student of the Institute in 1913.

SIR WILLIAM CROOKES died at his residence, 7, Kensington Park Gardens, on April 4th, in his eighty-seventh year. Born in Regent Street, London, he studied at the Royal College of Chemistry under Hofmann, whom he assisted for some years before he was appointed, in 1854, superintendent of the meteorological department of the Radcliffe Observatory at Oxford. In the following year, he became lecturer in chemistry at the training college for teachers at Chester, but returned to London shortly after, and conducted a consulting practice. He will be remembered for the discovery of thallium, in 1861, and the invention of the radiometer in 1875. as well as for his work on the phenomenon of cathode rays, spectroscopic work on the rare earths, his investigations on glass, his theories on the origin of matter and many other subjects. In 1859, he founded the Chemical News. which he edited until his death, and was Editor of the Quarterly Journal of Science in 1864. He was the author or translator of numerous publications. including "The Wheat Problem," 3rd Edition, 1917; "A Practical Treatise of Metallurgy," 1869; "The Manufacture of Beetroot Sugar in England," 1870; "Select Methods of Chemical Analysis," 1871; "Handbook on Dyeing and Calico Printing," 1874; "Dyeing and Tissue Printing," 1882; "Wagner's Chemical Technology." He also produced a work on the Phenomena of Spiritualism" in 1874. He was elected a Fellow of the Royal Society in 1863, received the Royal Medal in 1875, the Davy Medal in 1888, and the Copley Medal in 1904, and was President of the Society from 1913 to 1915. He was President of the Chemical Society in 1867; of the Chemical Section of the British Association in 1886, and of the Association at the meeting held at Bristol in 1898. He was President of the Institution of Electrical Engineers in 1891, and of the Society for Psychical Research 1896 to 1899. In 1880 he received a gold medal and prize from the French Academy of Science and, in 1899, was awarded the Albert Medal of the Royal Society of Arts. He received the honour of knighthood in 1897 and the Order of Merit in 1910. He was an Original Fellow of the Institute and served as a Member of Council from 1877 to 1880.

The President and the Registrar attended the Memorial Service at St. John's Church, Ladbroke Grove, before the funeral service at Brompton Cemetery, on April 10th, and a wreath was sent on behalf of the Institute.

Thomas Fairley died at Leeds on February 21st, 1919. Born in Glasgow in 1843, he studied chemistry at the University of Edinburgh under Dr. Lyon—later Lord—Playfair, whom he subsequently assisted in teaching. Later, he established a practice as an analytical and consulting chemist in Leeds and became Public Analyst for the North Riding of Yorkshire and the City and County Borough of Leeds. He was a Past-President of the Society of Public Analysts (1903—4), a Past Vice-President (1896—99, 1901—4) and a Past Examiner (1892—95) of the Institute. He also served as a Member of the Council (1887—90). He contributed many papers to the journal of the Chemical Society, the Journal of the Society of Chemical Industry, and the Analyst, and was the author of several articles in Thorpe's Dictionary of Applied Chemistry." He was elected a Fellow of the Institute in 1878.

CAPTAIN ALEXANDER GEMMELL died early in January, 1919, at Murtle, Aberdeenshire, in his thirtieth year. The son of Mr. G. H. Gemmell, F.I.C., he was educated at Gillespie's School and George Watson's College, Edinburgh, and proceeded to Edinburgh University, where he graduated at the age of nineteen, and was then appointed, in 1908, Assistant to the Chemical Department. On leaving the University, he became associated with his father in the consulting practice of Messrs. Readman and Gemmell in the same city, and passed the Examination for the Associateship of the Institute in 1912. Soon after the outbreak of war, he rejoined the University O.T.C., and had command of the unit for about a year. Subsequently he was appointed to the command of an Anti-Gas School, but was transferred in September, 1917, to the Anti-Gas Department in London, where he worked with the late Lieut.-Colonel Harrison in devising means of defence against poison gas, the effects of which were the cause of his death. In the words of his Commanding Officer-" He died on active service as much as any soldier in the field." He was granted the degree of Doctor of Science, in 1915, and was elected a Fellow of the Institute in 1916.

JOHN FREDERICK HALL died at Langley, Birmingham, on November 22nd, 1918, in his twenty-fifth year. Born at Armley, Leeds, and educated at the Keighley Trade and Grammar School, he gained a scholarship and exhibition, and proceeded to the Royal College of Science, London,

where he obtained the diploma A.R.C.S. and the degree of B.Sc. (Lond.) with first class honours in chemistry. During the latter period of his training, he assisted in the preparation of drugs for the Admiralty, being one of the first to make  $\beta$ -cucaine in considerable quantity. He then obtained an appointment with Messrs. Chance & Hunt, and at the time of his death was Chemist-in-Charge of Acid Plants at H.M. Factory, Site "A," Oldbury. He was elected an Associate of the Institute in 1917.

Sidney Harvey died at Watling House, Canterbury, on March 27th, 1919, in his eighty-fifth year. In 1854 he entered the Royal College of Chemistry and worked with Prof. Hofmann. In 1861 he started an analytical and consulting practice in Canterbury and was subsequently appointed Public Analyst for that city and for the principal boroughs of East Kent, being joined later by Mr. E. M. Hawkins, who succeeded to the practice. He was a past Vice-President of the Society of Public Analysts and contributed various papers to the official organ of the Society. He was elected a Fellow of the Institute in 1888.

EDWIN SIDNEY HAWKINS died in Birmingham on December 7th, 1918, aged twenty-four years. Educated at Bournemouth School he gained a scholarship to Birmingham University and graduated with first class honour in Chemistry at the age of nineteen years. He subsequently qualified for the M.Sc. degree, and in the same year gained the Priestley Research Scholarship. He passed the Examination for the Associateship of the Institute in 1913, and was elected in 1915 on coming of age. In June, 1914, he obtained a position in the Research Laboratory of Messrs. Albright & Wilson, Ltd., Oldbury, which he held until the time of his death.

Andrew King died on February 19th, 1918, at the age of fifty-seven years. He was trained at Edinburgh University under Prof. A. Crum Brown, and was Junior Demonstrator in Chemistry until 1889. He was a Medallist in Natural Philosophy and Neill Arnot Prizeman in Experimental Physics. He was also associated during 1887 and 1888 with the late Dr. John Gibson in the preparation and investigation of pure beryllium compounds with the view to the redetermination of the atomic weight of beryllium. In 1890 he became private assistant to Mr. J. Y. Buchanan, F.R.S., who then had a laboratory in Edinburgh and with whom he remained for several years, being engaged on research on manganese nodules and other deep sea deposits and minerals allied thereto. Later he joined the staff of the Chemical Department of the Heriot-Watt College. He was elected a Fellow of the Institute in 1892.

JOHN FALCONER KING died at Edinburgh on February 12th, 1919. He was trained under Dr. Penny of Glasgow and, about 1868, established a practice in the city of Edinburgh, being subsequently appointed Publi-Analyst for the city, and for a large number of Scottish Burghs. He was an Extra-Mural Teacher of Chemistry in the Edinburgh Medical School and Gas Examiner for the city of Edinburgh. He was elected a Fellow of the Institute in 1878.

ROBERT SYDNEY MARSDEN died at Oxton, Cheshire, on March 8th, 1919, at the age of sixty-two years. Born at Sheffield, he received his training at Edinburgh University, where he worked for six years under Prof. Crum

Brown and graduated B.Sc. He subsequently proceeded to the Universities of Göttingen, Berlin and Paris. In 1879 he held an appointment as Lecturer in Chemistry at University College, Bristol, where he was for several years engaged on research. In about 1880 he obtained the degree of D.Sc., but shortly after turned his attention to medicine and, after graduating as M.B. (Edin.) in 1885, became Medical Officer of Health for Birkenhead, which appointment he held at the time of his death. He was the author of many papers on chemistry, physics and matters dealing with public health. He was elected a Fellow of the Institute in 1888.

James Namo died at Norwood on December 3rd, at the age of sixty-four. Born at Busby, near Glasgow, he received his training in chemistry in the laboratories of Messrs. Wallace, Tatlock & Clark. After some experience as chemist in a Scottish Alkali Works he entered the laboratory of Dr. Bernard Dyer, with whom he was associated until the time of his death. He was Public Analyst for Weymouth and Melcombe Regis, and Deputy Official Agricultural Analyst for several counties. He was Past Member of Council of the Society of Public Analysts, and was elected a Fellow of the Institute in 1880.

Thomas Stanley Norman died at Runcorn in December. 1918, in his twenty-ninth year. The only son of Sir Frederick Norman, he was born at Runcorn and educated at Liverpool College Upper School. In 1908 he proceeded to Cambridge University, where he took the degree of M.A. After leaving Cambridge in 1911, he spent a year on research with Jannasch at Heidelberg University, and in 1912 became Chemist and Assistant Manager to the United Alkali Co. At the time of his death he was about to be called to the Bar. He was elected an Associate of the Institute in October, 1918.

Norman Scott Rudolf died in London on January 29th, 1919, in his forty-seventh year. Born at Row, in the county of Dumbartonshire, he received his training at University College, Liverpool, where he graduated as B.Sc. in the honours school of chemistry, subsequently receiving the degree of M.Sc. (Viet. & Liv.). He passed the Examination for the Associateship of the Institute in 1892 and was elected to the Associateship in 1893. Shortly after passing the examination he received an appointment at Sewan, Bengal, where he was engaged on investigations connected with the chemistry of cultivation and the manufacture of indigo. He was also appointed by the Bengal Government to examine samples of water for the municipalities and other authorities of the Bengal Presidency. In 1895 he joined Messrs. Parke, Davis & Co., and became their general agent in India and Ceylon. Later he was appointed Professor of Applied Chemistry in the Indian Institute of Science, Bangalorc, which position he held until shortly before the war. He was elected a Fellow of the Institute in 1899.

HARRY SHULMAN died in London on February 22nd, 1919, in his twenty-sixth year. He was trained at East London College, and obtained the degree of B.Sc. with first class honours in chemistry in 1914, passing the Examination for the Associateship of the Institute in 1915. After assisting Prof. J. T. Hewitt, in research for a year, he became Assistant Chemist in the laboratory of H.M. India Office at the Store Depót, which post he relinquished after two-and-a-half years to become Research Chemist to Messrs. Pickard, Ive and Rankin, Ltd., of Notting Hill. He was elected to the Fellowship of the Institute in 1918.

James Carter Spensley died at Gretna on December 16th, 1918, in his thirty-third year. He matriculated in the University of the Cape of Good Hope and received his technical training at the Transvaal University College. Pretoria, graduating with honours in chemistry, and proceeding in due course to the degree of M.A. He then became Assistant Lecturer and Demonstrator in Chemistry at the Transvaal University College until 1914, when he served as a sergeant in the Pretoria Section of the Active Civic Guard during the South Áfrican Rebellion. Later he became engaged in the laboratory of Messrs. Kynoch's, Ltd., Natal, but left early in 1917 to take up an appointment with the Ministry of Munitions in England. He was elected an Associate of the Institute in 1917.

Lieut Guy Somerville Stewart was killed in action on March 28th, 1919, in his twentieth year. He was educated at Westminster City School and Harrow County School, and passed the Matriculation Examination before registering, at University College in 1915, as a Student of the Institute.

Francis Godfrey Tarn died on February 11th, 1919, in his thirty-second year. He was trained at Finsbury Technical College and passed the Intermediate and Final Examinations of the Institute, being elected to the Associateship in 1913. He obtained an appointment as a chemist in the Testing Department, of the Engineer-in-Chief's Branch of the General Post Office, where he remained until his death. He was elected a Fellow of the Institute in 1916.

Captain and Adjutant William Currie Taylor died at Leith on November 7th, 1918, in his twenty-fourth year. He was educated at Leith Academy and graduated in Arts and Science in the University of Edinburgh. At the outbreak of war he was working in the laboratory of the Neva Stearine works at Petrograd, but returned to this country and joined the Edinburgh University O.T.C. Artillery Unit, in due course receiving a commission in the R.F.A. He proceeded to France in September, 1915, and was at the time of his death Captain and Adjutant to the 14th Divisional Ammunition Column. He was elected to the Associateship of the Institute in October, 1918.

#### FELLOWS, ASSOCIATES, STUDENTS AND CANDIDATES FOR EXAMINATION WHO ARE SERV-ING OR WHO HAVE SERVED WITH H.M. FORCES.

(Supplementary List.)

#### ASSOCIATES.

Stewart, R. F., Lieut. R.F.C., M.C. West R. W., Captain. Wright, A. M., Captain, N.Z.M.C.

#### STUDENTS.

Blakey, R. F. W., Glasgow University O.T.C. Brown, L. G., 2nd Lieut. R.A.F. Maltby, J. G., Sergeant Notts. O.T.C. Thomson, R. W. M., 2nd Lieut. R.G.A.

Since the publication of the List given in Proceedings, Part I., 1919, entries have been altered in the following cases:—

#### FELLOWS.

Akers, N. C., Lieut. R.N.V.R., D.S.C. Ball, W. C., Major R.E.

Crossley, Lieut.-Colonel, R.E., C.M.G., Officer of the Legion of Honour; twice mentioned for services.

Eaton, B. J., Captain, O.C., Malayan Volunteer Infantry, Selangor.

Goldsbrough, H. A., Captain R.E.

Heilbron, I. M., Lieut.-Colonel, R.A.S.C. (D.S.O., Gold Cross, Order of the Redeemer, Greece; thrice mentioned in despatches).

Lambourne, H., Lieut. R.A.F. Smith, A. R., Captain A.O.D.

Warner, C. H., Captain R.A.M.C.

#### ASSOCIATES.

Bickerstaffe, R., Pioneer, R.E. Braunholtz, W. T. K., Pioneer R.E. Signal Service. Crundall, S. E. W., Pioneer R.E. Forsyth, W. C., Corporal R.E.

Paterson, J. B., Pioneer, R.E. Somer, A. J., Sergeant R.E. Wallace, T., Captain 3rd Border Regiment. West, J. D. F., Lieut. R.A.F. Wilson, A., Major Leinster Regiment (Military Cross).

#### STUDENTS.

Benstead, T. B., R.A.S.C.
Awcock, G. A., 3rd Air Mechanic, Marine Branch, R.A.F.
Cooper, H. E., Captain R. Warwickshire Regiment.
Gibson, S., Temp. Lieut. A.C.C.
Hocking, F. D. M., R.N., Anti-Gas Department.
Hornby, A. J. W., Lieut. R.G.A.
Jones, W. F., 2nd Lieut. R.A.F., attached to Navy.
Murphy, E. A., 2nd Class Mechanic, R.N.V.R.
Parker, H. V., Captain R.F.A.
Rudolf, M. E. S., Army Reserve W., A.I.D.
Smith, F. W. H., 1st Class Air Mechanic, R.N. Experimental Service.
Suckling, E. V., Lieut. R.A.M.C. (mentioned in despatches).

# The Register.

Since the publication of Proceedings, Part I., in February, 1919, the Council have elected 1 new Fellow and 36 new Associates; 5 Associates have been elected to the Fellowship, and 25 Students have been admitted; 1 Fellow has been re-elected.

The deaths of 9 Fellows, I Associate, and I Student have been reported.

#### New Fellow.

Philip, James Charles, O.B.E., M.A., D.Sc. (Aberd.), Ph.D. (Göttingen), F.R.S., The Imperial College of Science and Technology, London, S.W. 7. (Professor of Physical Chemistry, Royal College of Science, London.)

#### Fellow Re-elected.

Thudichum, George Dupré, 2, Edinburgh Mansions, Howick Place, Westminster, London, S.W. 1.

#### Associates Elected to Fellowship.

Corfield, Charles Edwin, 17, Bloomsbury Square, London, W.C. 1.

Harvey, Harold Minter, c/o Messrs. Burgoyne, Burbidges & Co., High Street South, East Ham, London, E. 6.

Jordan, Louis Arnold, B.Sc., A.R.C.S. (Lond.), Messrs. Boot's Pure Drug Co., Nottingham.

Smith, Frederick, Montrose, 1, Greenham Road, Muswell Hill, London, N. 10.

Wilkinson, John Alfred Frome, B.Sc. (Lond.), 99, Ruskin Road, Crewe.

#### New Associates.

Elected under the special provisions of the Regulations adopted by the Council, July, 1917, and July, 1918.

S. = Naval, Military, or Air Service. M = Munitions.

I.I. = Passed the Intermediate Examination of the Institute.

Bell, Wilfrid Andrews, 5, Cobden Terrace, Hipperholme, nr. Halifax, Yorks Bradford Tech. Coll. Diploma; S.]

- Bolton, Harold Samuel, 99, Kenilworth Avenue, Wimbledon Park, London, S.W. 19. [Bradford Tech. Coll.; S.]
- Bramer, Captain John Douglas Stacey, 36, Robin Hood Road, Brentwood, [Birmingham University; I.I.; S.]
- Browne, Walter Lord, B.Sc. (Leeds), 25, South Road, Smethwick, Staffs.
  [M.]
- Drew, Harry Dugald Keith, M.Sc. (Lond.), 94, Cambridge Street, Warwick Square, London, S.W. [S.]
- Drummond, John Malcolm, M.Sc. (Vict.), 61, Peak Hill, Sydenham, London, S.E. 26. [Govt. Lab.; Research.]
- Embleton, Arthur, M.Sc., Tech. (Manc.), 272, Stockport Road, Bredbury, nr. Stockport. [M.]
- Harris, Captain Charles, L.R.C.P., L.R.C.S. (Edin.), A.R.T.C. (Glas.), 41, Forsyth Street, Greenock, Scotland. [Royal Tech. Coll., Glasgow: S.]
- Herbert, George Girvan, 16, Bank Street, Glasgow, W. [Royal Tech. Coll., Glasgow; M.]
- Hopkinson, George Green, 317, Killinghall Road, Bradford, Yorks. [Bradford Tech. Coll.; Dyes].
- Jay, Arthur Howard, B.Se., War (Lond.), 112, Church Street, Bloxwich-Staffordshire, [M.; Demonstrator of Chemistry, King's College, London.]
- Jennison, Lieut, Richard, A.M.C.T., Hawthorn Bank, Longsight, Manchester [Coll. of Tech., Manchester; M.]
- Jones, Archibald Orton, B.A. (Oxon.), 14. Claremont Road, Cape Hill. Smethwick, Staffs, [M.]
- Lane, Francis Henry Newey, B.Sc. (Lond.), Queensberry, 2. Dover Street. Coventry. [Works Chemist.]
- Lee, Walter Evelyn, B.A. (Cantab.). "Beechmoor," Shipley Glen, Shipley. Yorks. [S.; M.]
- Littler, Robert Pearson, A.M.S.T., 504, Bath Road, Bristol. [Coll. of Tech., Manchester; eleven years' experience.]
- Milligan, Arthur George, B.Sc. (Q.U.B.), The Grange, Annadale, Belfast. [University Demonstrator.]
- Morris, Edgar Ford, M.A. (Oxon.), Holly Bank, Roby, nr. Liverpool. [Chemical Manager, Smelting Co.]
- Murdoch, Alexander, A.R.T.C. (Glas.), Garden Suburb, Westerton, Dunbartonshire. [Lecturer, Royal Tech. Coll., Glasgow; Publications.]
- Pooley, John William, B.Sc., War (Lond.), Civilians' Quarters, Kingsnorth Airship Station, Hoo, North Kent. [M.]
- Powell, John Henry, 116, Denmark Hill, London, S.E. 5. [S.W. Polytechnic Inst.; fourteen years' experience; S.]
- Pracy, Henry Edward Findlater, B.A. (Cantab.), 25, Grosvenor Park. Camberwell, S.E. 5. [M.]
- Quinn, Gerald Grattan, A.R.C.S. (Lond.), 6, Glenroyd, Spotland.

Rochdale. [Head of Chemistry, Bleaching and Dyeing Dept., Rochdale Technical School: Research.]

Ritchings, Walter, M.Sc. (Vict.), The Cowley Schools, St. Helens, Lancs, [Twenty years teaching in Schools and Technical Schools.]

Rooney, Thomas Edmund, A.M.S.T., 68, Clarence Road, Teddington, Middlesex, [Research.]

Rowland, James Frederick Fothergill, B.A. (Cantab.), 18. Kingdon Road, West Hampstead, London, N.W. 6. [Fourteen years practical experience; Lecturer, Harrow School.]

Runeckles, Arthur Robert, B.Sc. (Lond.), A.C.G.I., 10, Brudenell Mount,

Hyde Park, Leeds. [M. Research.]

Scafe, Norman Edward, 222, Gladstone Street, Bradford, Yorks. [Bradford Tech. Coll. Diploma; twelve years experience: Bradford Dyers' Asso.]
Singleton, Henry Percival, B.Sc. (Queensland). Staff Residence, H.M.

Factory, Avonmouth. [M.]

Sissons, Alfred Thomas Stanley, B.Sc. (Melb.), 83, Drakefield Road, Balham, London, S.W. [Science Master; M.]

Stevenson, James Arnold, A.M.C.T., 76, Hodges Street, Wigan. [Coll. of Tech., Manchester; M.; S.]

Stewart, Lieut, Robert Forbes, M.C., 35, Roxburgh Circus, Cardonald, Glasgow, [Royal Tech. Coll., Glasgow; S.]

Taylor, Miss Millicent, D.Sc. (Bris.), Clough Cottage, Charlton Kings, Cheltenham. [Lecturer in Chemistry, Ladies College, Cheltenham; M. Research.]

Telfer, Stephen Veitch, M.B., Ch.B. (Glas.), 533, Victoria Road, Crosshill, Glasgow. [Royal Tech. Coll. and University, Glasgow; S.]

Tincknell, George Mark, B.Sc. (Bris.), 1, Sunny Hill Villas, Bruton, Somerset.
[S.; M. Research.]

Wright, Captain Allister Maclean, N.Z.M.C., P.O. Box 617, Christchurch, New Zealand. [University of N.Z.: thirteen years' experience; S.]

#### Students.

Allan, Hamish, 16, Tavistock Square, London, W.C. 1.

Broom, Walter Alfred, 2, Diseworth Grove, Mundella Road, Nottingham.

Caswell, Arthur Edward, 273, London Road, Thornton Heath, Surrey.

Fox, Miss Margaret Lucy, 5, Strafford Road, Twickenham.

Graham, Gilbert, 7, Campsie Terrace, Thornliebank, nr. Glasgow.

Hutton, Robert, North Park, Thornliebank, nr. Glasgow.

Illing, Edward Thomas, St. Andrew's House, Roupell Street, Lambeth, S.E. 1.

Jackson, John Arnold, 167, Westbourne Avenue, Great Lever, Bolton, Lucke, Douglas Thurlow, Gemcote, Cliffsea Grove, Leigh-on-Sea, Essex,

Maltby, John Gwilliam, 29, Winchelsea Avenue, Newark.

Moses, Lieut. Benjamin, B.Sc. (Liv.), 14, Curzon Avenue, Victoria Park, Manchester.

Mottram, Edward Neville, 49, Wellington Road, Eccles.

Phillips, Archibald John, 35, Surrey Road, Peckham Rye, London, S.E. 15

Pink, Herbert Sheppard, The Limes, Newark-on-Trent.

Rawling, Tom, 24, Norwood Terrace, Victoria Road, Headingley, Leeds.

Robertson, Gilbert Bruce, 20, Lockhart Street, Stonehouse, Lanarkshire.

Shoesmith, John Baldwin, Saxon House, Thursby Square, Burnley.

Shorrock, James Norman, Beech Mount, Winnington, Northwich, Cheshire, Sterne, Edmund Joseph, School House, Felsham, Bury St. Edmunds, Suffolk.

Tayroges, Joseph, 36, Grafton Street, Mile End Road, London, E. I.

Tunley, Harold, 102, Windsor Street, Wolverton, Bucks.

Ward, Harry, 6, Mount Terrace, Holgate, York.

Weston, Stanley Haworth, 25, Linn Terrace, Catheart, Glasgow.

Wilkes. Horace Edward, 60, Trinity Road, West Bromwich.

Yorston, James, 29, Winton Place, Tranent, East Lothian, Scotlan i.

#### DEATHS.

#### Fellows.

Sir William Crookes, O.M., F.R.S.

Thomas Fairley.

Sidney Harvey.

Andrew King.

John Falconer King.

Robert Sydney Marsden, D.Sc., M.B. (Edin.).

Prof. Norman Scott Rudolf, M.Sc. (Vict. and Liv.).

Harry Shulman, B.Sc. (Lond.).

Francis Godfrey Tarn.

#### Associate.

John Frederick Hall, B.Sc. (Lond.), A.R.C.S.

#### Student.

Lieut. Guy Somerville Stewart, R.F.C. (killed in action).

Errata.—Owing to an incorrect statement made on a returned postal packet, the name of Mr. William Arthur Silvester was erroneously included in the list of deaths reported in Proceedings Part I., 1919.

In the list of New Associates printed in Part I., 1919, Mr. W. D. Doughty should have been described as "Assistant Chemist, Messrs. Price's Company, Ltd., Belvedere"; Mr. A. Farmbrough, as "Assistant Chemist, India Office Store Depot."

## General Notices.

**Examinations.**—Candidates who desire to present themselves for examination in July are requested to communicate with the Registrar.

Examinations in Biological Chemistry.—The Council will be prepared to arrange for an Examination in Biological Chemistry, Bacteriology, Fermentation, and Enzyme Action to be held in October, 1919.

Notice to Associates.—Associates elected prior to April, 1916, who can produce evidence satisfactory to the Council that they have been continuously engaged in the study and practical application of chemistry for at least three years since their election to the Associateship, may obtain forms of application for election to the Fellowship.

Appointments Register.—A Register of Fellows and Associates of the Institute of Chemistry who are available for appointments is kept at the Offices of the Institute. For full information, inquiries should be addressed to the Registrar.

Fellows and Associates are invited to inform the Registrar of suitable appointments for professional chemists.

The Library.—The Library is open for the use of Fellows, Associates and Registered Students, between the hours of IO A.M. and 6 P.M. on week-days (Saturdays: IO A.M. to 2 P.M.), except when Examinations are being held.

The Library of the Chemical Society (Burlington House, Piccadilly, London, W.) is also open for the use of Fellows and Associates of the Institute daily from 10 A.M. to 9 P.M.,

except on Saturdays when it is closed at 5 P.M.

The Register.—Fellows, Associates, and Students are requested to notify the Registrar immediately of any change which they may wish made in the Register, which is about to go to press.

## **Honorary Secretaries of Local Sections.**

F. C. A. H. Lantsberry, M.Sc., F.I.C., Birmingham ... 63, Walford Road, Sparkbrook, Birmingham. Edinburgh — East of B. D. W. Luff, F.I.C., 85, Ashley Ter-Scotland. race, Edinburgh. Glasgow — West of T. A. Wilson, F.I.C., 91, New Road, Scotland. Ayr. William Caw, F.I.C., No. 3, Staff Gretna Ouarters, East Riggs, Dumfriesshire. Ireland Dr. A. G. G. Leonard, F.I.C., 18, Belgrave Road, Dublin. John Hanley, F.I.C., 7, University Liverpool and North-Western. Road, Bootle, Liverpool. London and South-William Bacon, B.Sc., F.I.C., 27, Wal-Eastern. brook, London, E.C. 4. Manchester ... David Cardwell, M.Sc., F.I.C., 50, Alexandra Road, South, Manchester, S.W. Newcastle - on - Tyne Dr. J. T. Dunn, F.I.C., 10, Dean Street, Newcastle-on-Tyne. and North-Eastern. A. J. Shelton, F.I.C., 10, Park Road, South Wales .. Clydach, S.O., Glam.



THE

# INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND

FOUNDED, 1877.
INCORPORATED BY ROYAL CHARTER, 1885.

### PROCEEDINGS.

1919.

#### PART III.

PROCEEDINGS OF THE COUNCIL (APRIL—JUNE, 1919).
CHEMISTS AND THE WHITLEY COUNCILS.
MINISTRY OF HEALTH AND SCOTTISH BOARD OF HEALTH.
THE CONSTITUTION OF THE INSTITUTE.
THE LOCAL SECTIONS.
THE FELLOWSHIP.
OBITUARY.
THE LIBRARY.
MEMBERS, STUDENTS, Etc., SERVING WITH THE FORCES.
CHANGES IN THE REGISTER.
NOTICES.

Issued under the supervision of the Proceedings Committee.

RICHARD B. PILCHER.

Registrar and Secretary

30, Russell Square, London, W.C. 1.

# Proceedings Committee, 1919-20.

OSCAR LISLE BRADY (Chairman),
SIR HERBERT JACKSON, K.B.E. (President),
WILLIAM BACON,
CECIL H. CRIBB,
A. C. CUMMING, O.B.E.,
J. T. DUNN,
H. G. LACELL,
J. H. LESTER,

ANDREW MORE,
G. H. PERRY, M.B.E.,
HARRY SILVESTER,
GEORGE STUBBS, O.B.E.

## Proceedings of the Council.

APRIL-JUNE, 1919.

Ministry of Munitions.—The following letter has been received from Sir W. Graham Greene, of the Department of Explosives Supply, Ministry of Munitions:—

MINISTRY OF MUNITIONS OF WAR. WHITEHALL PLACE, S.W. 1. 29th April, 1919.

SIR.—I am directed by the Minister of Munitions to state that he desires to take the opportunity, afforded by the termination of the activities of many of the Ministry Departments, to express his appreciation of the valuable assistance rendered to the Ministry by the Institute of Chemistry of Great Britain and Ireland. The task of the Department of Explosives Supply, especially in the early and more difficult stages of the organisation of His Majesty's Explosives Factories, was greatly facilitated by the aid given by the Institute in the recruiting of candidates suitable for training to fit them for the work of the Department; and the Ministry is also indebted for the assistance of the Institute in the recruitment of personnel qualified to undertake duties connected with the chemical side of the manufacture of explosives.

Lord Inverforth, in conveying on behalf of himself and his predecessors his thanks to the President of the Institute, desires to place on record his

appreciation of the valuable services rendered by the Secretary.

I am, Sir, Your obedient servant, (Signed) W. GRAHAM GREENE.

To the Registrar and Secretary, Institute of Chemistry of Great Britain and Ireland, 30, Russell Square, W.C.

General Purposes Committee.—The General Purposes Committee have had under consideration many matters of interest to Fellows and Associates, including a number of suggestions received from Local Sections.

ByE-Laws.—The revision of the Bye-Laws has been under discussion, and the proposed alterations have been referred

to the Solicitors of the Institute. The revised draft will be forwarded to the Committees of Local Sections before it is submitted to an Extraordinary General Meeting of the Institute.

Policy of the Institute.—The Council have received, through Dr. John McCrae, Honorary Corresponding Secretary of the Institute, Johannesburg, a letter expressing the opinions of Members in South Africa on the recent policy of the Institute, especially with regard to the admission of Fellows and Associates without examination and the fees applying to such cases. A reply has been forwarded to Dr. McCrae, dealing in detail with the points raised, which are summarised in the following abstract:—

Attention was directed to the publications of the Institute. in which reference is made to the new policy: (1) Proceedings: Part IV., 1917, pp. 7—15; (2) Part I., 1918: the Report of the Council, pp. 9—12; (3) Part II., particularly Sir James Dobbie's Address (pp. 28—41) and the discussion at the Annual General Meeting (pp. 9—23); (4) Part III., the account of the Extraordinary General Meeting, pp. 9—46: and (5) Regulations (July, 1918), which embody the decisions of that meeting.

These publications show that the Institute in General Meeting decided to organise trained and competent British chemists in one body, both in their own interests and in those of the public. To effect this object, the Institute decided to elect to the Associateship candidates who had obtained approved degrees with honours in chemistry, or who produced evidence of having attained an equivalent standard of qualification in chemistry, physics, and allied subjects, and had subsequently proved their claim to be chemists by practical experience in one of the recognised branches of the profession. As a result there has been a very considerable access of strength to the Institute, which will undoubtedly add to its prestige and influence.

The applications are considered by the Nominations and

Examinations Committee before they come to the Council. The Committee consists largely of Fellows who have themselves been examined and who may be relied on to regard jealously the standard of evidence demanded.

The aim of the Institute in the whole matter has not been to acquire funds, but to organise the profession. Candidates elected to the Associateship are not required to pay Examination Fees, for the reason that they will be required to fulfil the new Regulations for the Fellowship, which (it may be anticipated) in most cases will necessitate passing an Examination, with payment of fees for the same, in addition to the usual Entrance Fees.

The increase of Members will not affect the finances of the Institute in such a way as to provide material surplus funds. Increased membership means additional expense, and even with the increased subscription, the balance of income over expenditure will be small under the present economic conditions and having in view the extension of the activities of the Institute.

There appeared to be an impression that the amount of the Life Compositions had been increased to pre-war Members of the Institute, but such was not the case.

The Council could hardly adopt the suggestion of imposing a levy on new Members, even if such levy were not outside the conditions stipulated when they made their applications, and no distinction could be made in the entries in the Register.

In the revision of the Bye-Laws the Council propose to consider the possibility of providing for voting powers to Members in Overseas Dominions or elsewhere abroad.

ADVISORY WORK OF THE INSTITUTE.—The Council have directed that the Committees of Local Sections be informed from time to time with regard to educational and professional matters on which advice is sought by the public and by members of the profession from the office of the Institute. It is hoped that the Committees of Local Sections will be able in their respective districts to take an active part in making

known the aims of the Institute and in maintaining uniformity of procedure in professional matters.

RULES FOR LOCAL SECTIONS.—The rules for Local Sections are now about to be printed, and copies will be sent to each Local Section for distribution among its respective members.

Chemists in War.—The Chairman of the Proceedings Committee has been requested to investigate the possibility of preparing an account of the services of British chemists during the war. The General Purposes Committee have had before them a schedule of possible contents of a book on the subject, and preliminary arrangements have been made with Messrs. Constable & Co. to act as the publishers for the Institute. All chemists who are in a position to assist in this matter are invited to communicate with the Registrar.

Bearing on the subject of the services rendered by professional chemists in war, and having in view the discussion which took place at the Annual General Meeting, and questions raised in correspondence since received, the Council have appointed a Committee to consider jointly with a Committee of the Institute of Metals the position of chemists and metallurgists in the services and in the Reserve and the action to be taken towards securing for them due recognition and adequate status.

Professional Chemists and the Whitley Councils.—The General Purposes Committee have also dealt with this matter. Following on the correspondence reproduced in this Part of the Proceedings (pp. 15—17), Sir Robert Robertson, Vice-President, Mr. E. W. Voelcker, Honorary Treasurer, Mr. William Macnab and Mr. William Rintoul, Members of Council, and the Registrar were received, as representatives of the Institute, by Mr. G. J. Wardle, M.P., on behalf of Sir Robert Horne, at Montague House, Whitehall, on July 30th. The interview was arranged for a preliminary conference on the means to be adopted whereby the Institute may be of service to the Ministry and the Industrial Councils in connection with technical questions arising under the Whitley

Report, and at the same time act in an advisory capacity on matters affecting the interests of chemists. The views of the Committee were sympathetically received by Mr. Wardle who promised to discuss them with the Minister.

#### Public Appointments Committee.—(See p. 18.)

CHEMICAL APPOINTMENTS IN INDIA.—Chemists contemplating the acceptance of official appointments in India should be made aware of the circumstance that great importance is placed on the maintenance of the social standing of gazetted officers. The initial rate of pay should not in any case be less than Rs. 500 a month, and provision should be secured for annual increments of Rs. 50 a month up to Rs. 700, and thereafter the rate of pay should be not less than Rs. 750 a month with increments of Rs. 50 up to at least Rs. 1,500. The conditions generally should correspond with those of other professional appointments in the Indian Civil Service.

Canadian Institute of Chemistry.—The attention of the Council has been directed to the inauguration of the Canadian Institute of Chemistry, with headquarters at Montreal and with aims very similar to those of the Institute of Great Britain and Ireland. The founders proposed originally to adopt the style of the Institute of Chemistry of Canada. The Council, on hearing of the movement, conveyed their good wishes for the success of the new Institute, but suggested that, in order to avoid possible misunderstandings in the use of distinctive initials indicating membership, the title should be changed to the "Canadian Institute of Chemistry," to which the founders of the new Institute have cordially agreed. The Council congratulate the new organisation on its inauguration, and will be ready at all times to co-operate with it in the interests of chemists.

Nominations and Examinations Committee.—The Committee have discussed a suggestion that Colloid Chemistry should be introduced as a Branch of the Examination for the Associateship. The Committee held that every properly trained chemist should have a good knowledge of this branch

of work, and that it would be possible for a Candidate to present himself for examination in Branch (g), Chemical Technology, offering a subject such as the technology of leather, rubber, etc., in which colloid chemistry plays an important part. The further consideration of the matter has been postponed for the present.

Interviewing Committees.—In collaboration with the Committees of Local Sections, the Council have appointed Interviewing Committees to interview candidates who have presented applications to the Institute, and to report to the Nominations and Examinations Committee thereon. Such Committees have already conducted interviews at Birmingham, Glasgow, Edinburgh, Liverpool, Manchester and Newcastle-on-Tyne. The Nominations and Examinations Committee and the Council desire to acknowledge the valuable help which has thus been rendered.

REGULATIONS FOR ELECTION TO THE FELLOWSHIP.—(See p. 23.)

APPOINTMENT OF EXAMINERS.—The Board of Examiners for the present year has been appointed as follows:—

Chairman: Sir Herbert Jackson, K.B.E., F.R.S., President. General Chemistry: Harold G. Colman, D.Sc.; Prof. Arthur W. Crossley, C.M.G., F.R.S.

Mineral Chemistry: G. Nevill Huntly, B.Sc., A.R.C.S. Metallurgical Chemistry: Prof. Cecil H. Desch, D.Sc.

Physical Chemistry: J. E. Coates, O.B.E., M.Sc.

Organic Chemistry: Prof. J. F. Thorpe, C.B.E., F.R.S.

('hemistry (and Microscopy) of Food and Drugs, etc.: Bernard Dyer, D.Sc.

Therapeutics, Pharmacology and Microscopy: Prof. F. Gowland Hopkins, D.Sc., F.R.S.

Biological Chemistry: Arthur Harden, D.Sc., F.R.S.

The Examinations in Branch (g), Chemical Technology, will be conducted by the Chemical Technology Examinations Board.

House Committee.—The House Committee have put in hand necessary redecorating and have arranged for further fitments, both for the laboratories and for the office.

WAR MEMORIAL.—A design has been prepared for a memorial to Fellows. Associates and Students who have died in the service of their country, and the work will be put in hand when the Roll of Honour is known to be correct. Members and Students are requested to notify the Registrar of any error in or omission from the following list:—

James Watson Agnew. John Love Strathearn Allan. James Duncan Archibald. James Scott Bainbridge. Montague Samuel Baker. John Edmund Bishop. Gavin Boyd. Joseph Arthur Brown. Clarence Edward Butcher. Norman Phillips Campbell. George MacLellan Carruthers. Stephen Hepworth Dennett. Ralph John Dunn. William Vivaish Eastman. Kenneth Gordon Garnett. Alexander Gemmell. Stuart Wycliffe Goodwin. Joseph Walter Harris. Edward Frank Harrison. Charles Oswald Haywood. John Robertshaw Hill. Richard Hofmeyr. Simon James Jones. Robert Gordon Kind. Herbert King. George William Moore.

Cyril John Nixon. Thomas McIlvean Paterson. Arnott Andrew Patterson John Howard Potter. Julius Sefton Prince. Albert Alexander Robinson. Lawton Keir Rodger. Kenneth Ross. Ferribee Sadler. Francis William Sanderson. William Gilbert Saunders George Evanston Smith. James Salsbury Smith. Leslie Phillips Smith. Guy Somerville Stewart. Oliver John Stone. John Holder Stearn. Allan Robert Steele. Edward Leslie Johnson Stockdale. William Currie Taylor. Arthur Guthrie Tye. Harold Vernon. Joshua Biram Crossley Wigfield. Cyril George Williamson. Thomas Wright.

Library Committee.—The Library Committee have been empowered to purchase books to the value of £50. A list of the recent addition is given in this Part (p. 34). The books are mainly standard works of reference and works on analytical chemistry required by candidates for the examinations at the Institute.

Metric Committee.—The Committee appointed by the Council to consider a pamphlet on the Metric and Decimal System prepared by the Conjoint Board of Scientific Societies has reported that they felt that chemists were brought perhaps more than other professional men into touch with the great advantages which the Metric System presents in that all the units are derived from and related to the fundamental unit of length. The great simplification of calculation and saving of time due to this appeared to the Committee to be of very great importance, and to form a very strong argument for the general adoption of the Metric System; and, whilst they hesitated dogmatically to state that its immediate compulsory adoption would be in all respects advantageous, they regarded it as eminently desirable that all possible steps should be taken to widen the sphere of its use.

In scientific work the metric system is already in general use, and the Committee recommended that chemists be urged

to exert their influence to promote its extension.

As chemists, the Committee did not feel called upon, however, to make any pronouncement on the question of the adoption of a decimal system of coinage.

A copy of the Report has been forwarded to the Conjoint

Board.

Lectures Committee.—Arrangements will be made for resuming the Lectures of the Institute in October. The chief object of the Lectures Scheme is to indicate to advanced students the scope and object of work actually carried out by professional chemists in various branches of practice.

Standards Committee.—With the sanction of the Council the Standards Committee convened a Conference, held at the

Institute on June 26th, to consider whether it is desirable to provide for the preparation and distribution of samples of pure chemical substances, ores, metals, etc., of ascertained composition, for use as standards in analytical work. The Conference was attended by representatives of the Federal Council for Pure and Applied Chemistry, the Chemical Society, the Society of Public Analysts, the Society of Chemical Industry, and the Institute of Metals.

On the understanding that the provision of standard samples of steel and iron had already been taken in hand by the Iron and Steel Institute, in conjunction with the National Physical Laboratory, and that the Institute of Metals and the National Physical Laboratory have under consideration the same problem with regard to non-ferrous metals, the attention of the Conference was directed mainly to the advisability of providing authoritative standard samples of other chemical substances and the steps to be taken to attain that object.

The President, in opening the Conference, related how the matter had been originally raised by Mr. Ridsdale in connection with the preparation of standard samples of iron and steel, and how the Standards Committee had thereupon been appointed. Dr. Dunn, the Chairman of the Committee, gave a résumé of the proceedings of the Committee, and referred to the provision of standard samples of various substances by the U.S.A. Bureau of Standards. Mr. Ridsdale informed the Conference of the progress made with regard to standard samples of iron and steel, and showed how they had not only been useful in practice, but had materially assisted in settling differences with regard to analytical results and had conduced to improvement in analytical methods. Dr. Rosenhain indicated that the National Physical Laboratory would probably take the matter up so far as it related to metals, both ferrous and non-ferrous, but that the Laboratory would not, for the present, be able to deal with other chemical standards. He mentioned also that the U.S.A. Bureau of Standards intended to extend its scheme.

In the course of the discussion which followed, the Conference agreed

to the following conclusions :-

That the provision of standard chemical substances was desirable.

for the general use of both chemists in practice and students;

That, having regard to the fact that such standards could not be provided without reference to methods of analysis, the scheme should not aim at restricting the choice of methods, but always at their revision and improvement, thereby diminishing the chances of discrepancy in results. Incidentally, by this means, science will be advanced and accuracy more generally attained;

That, in view of the importance of analysis in carrying out the scheme, the whole matter should be referred in the first place to the Society of Public Analysts, with the suggestion that the Society should

form a special Committee, on which representatives of the allied Bodies

should be co-opted;

That the Society be asked to frame a scheme for the consideration of the Federal Council for Pure and Applied Chemistry, reporting on its practicability, the cost of the investigations involved, and the organisation generally;

That ultimately the scheme be submitted to the Department of scientific and Industrial Research, and, if necessary, the support of the Conjoint Board of Scientific Societies should be asked to secure the

co-operation of the Government in its fulfilment;

That, in the event of the Government placing the matter under official control, provision should be made for the co-operation in the scheme of the recognised Bodies concerned with chemistry and their

respective members;

That copies of this Report be forwarded to the Federal Council for Pure and Applied Chemistry and the Councils of the Chemical Society. the Society of Chemical Industry, the Society of Public Analysts, and the Institute of Metals.

The Register.—The publication of the Register of Fellows, Associates and Students, which has been suspended during the war, has been unavoidably delayed owing to heavy pressure of other business; but it will be corrected to August 1st, and should be ready during that month. Alterations in addresses, etc., should be notified to the Registrar without delay.

Honorary Corresponding Secretaries.—The Council have appointed additional Corresponding Secretaries in Overseas Dominions. The complete list is as follows:—

British East Africa.—Vincent Henry Kirkham, B.Sc.

The Commonwealth of Australia.—Thomas Cooksey, B.Sc., Ph.D.: New South Wales; John Brownlie Henderson: Queensland; Edward Henry Rennie, D.Sc.: S. Australia; Arthur Edgar Leighton: Victoria.

The Dominion of Canada.—Walter Charles Carter: Nova Scotia; Frank Thomas Shutt. M.A.: Ontario: William Robert Lang, D.Sc.: Ontario: Frederick Murray Godschall Johnson, Ph.D.: Quebec.

Egypt.—Alfred Lucas.

The Empire of India.—John Charles Burnham, C.S.I., B.Sc.: Madras; Gilbert John Fowler, D.Sc.

Mauritius.—Harold Tempany, D.Sc.

Dominion of New Zealand.—Thomas Hill Easterfield, M.A., Ph.D.; John Kenneth Harold Inglis, M.A., D.Sc.: William Rest Mummery.

The Straits Settlements and the Far East.—Frankland Dent, Ph.D., M.Sc. The Union of South Africa.—Charles Frederick Juritz, M.A., D.Sc.: Cape Province; John McCrae, Ph.D.: Transvaal: James Sprunt Jamieson: Natal Province

British West Indies.—John Pedrozo D'Albuquerque, M.A.: Barbadoes; John Burchmore Harrison, C.M.G., M.A.: British Guiana; Sir Francis Watts, K.C.M.G., D.Sc.: Barbados.

Watt Centenary.—At the request of the Council, Dr. E. W. Smith, Chairman of the Birmingham Local Section, is acting as the representative of the Institute on the Committee formed in connection with the Celebration of the James Watt Centenary.

Death of Sir Boverton Redwood, Bart.—The Council record with much regret the death of Sir Boverton Redwood, an Original Fellow of the Institute, a Member of Council from 1889—91, 1892—95, 1897—1900, 1910—13, and a Vice-President from 1913—16.

The Peace Treaty The following Articles are quoted from the Conditions of Peace, published by *The Times*, June 28th, 1919:—

"171. The use of asphyxiating, poisonous or other gases, and all analogous liquids, materials or devices, being prohibited, their manufacture and importation are strictly forbidden in Germany.

"The same applies to materials specially intended for the manufacture, storage and use of the said products or devices.

"The manufacture and the importation into Germany of armoured cars, tanks, and all similar constructions suitable for use in war are also prohibited.

"172. Within a period of three months from the coming into force of the present Treaty, the German Government will disclose to the Governments of the Principal Allied and Associated Powers the nature and mode of manufacture of all explosives, toxic substances, or other like chemical preparations used by them in the war, or prepared by them for the purpose of being so used."

German Trade Overtures.—In the issue of *The Times* for June 18th attention was directed, under the above heading, to correspondence which had passed between Messrs. Schering

and Glatz, of New York—formerly connected with concerns at Berlin, Radebul, and Leipzig—and a firm in Australia. Messrs. Schering and Glatz solicited inquiries for business, offering their products, "with a few exceptions, at pre-war prices" and at "special export prices for larger quantities."

The firm in Australia, in reply, referred to their former relations with Messrs. Schering and Glatz, stated in frank and scathing terms their views on the methods of warfare adopted by Germany, and concluded— "None of us here want your products, your countrymen, nor your communications."

The following is quoted from a leading article in the same issue of *The Times*, referring to this and other efforts on the part of German concerns to "organise sympathy" with a view to the renewal of "peaceful penetration," ranging from pious appeals to attractive business propositions: "Trade with Germany no doubt will be gradually resumed, subject to such restrictions and regulations as the Allies and Associates may from time to time decide. But it will never be trade upon the old terms or upon any terms resembling them. Germany will not be allowed for a second time to fasten her poison fangs upon just those 'key' industries which are vital to all nations at war."

# Chemists and the Whitley Councils.

The Council of the Institute have been in correspondence for some time with the Ministry of Labour with reference to the possible representation of qualified chemists on Industrial Councils. The following letter received from the Minister was referred to the General Purposes Committee, and was under discussion at two meetings:

H.O. 12107-6.

MINISTRY OF LABOUR,

MONTAGU HOUSE, WHITEHALL, LONDON, S.W.

9 May, 1919.

SIR,-I am directed by the Minister of Labour to refer to your letter of 30th April, and to inform you that the question of the representation of technical and scientific workers upon Joint Industrial Councils has for some

time been the subject of careful consideration in the Ministry.

I am to state that while Sir Robert Horne is of opinion that it is desirable in order that the Councils should be able to deal with the very important technical and other matters referred to in paragraph 16 of the first Whitley Report, that technical and scientific experts should be associated on the Council and its Committees with the representatives of employers' associations and trade unions, he feels that, as the setting up of a Council is the voluntary act of the industry concerned, it is for the various associations of the classes of workers in question to take the necessary steps, and to approach the Councils and their constituent associations and trade unions in the matter.

In this connection. I am to point out that, as a broad principle, representation upon Joint Industrial Councils is confined to associations representing employers and workpeople, and, further, that limitations in the size of the Councils render it difficult to secure direct representation for certain sections, which, although they may be important by reason of the nature of their work, etc., are numerically small. Provision has, however, been made in the constitutions adopted by Councils for the co-option of persons of special knowledge and experience, not being members of the Council, by means of which it is anticipated that the services of technical and scientific experts will be utilised to a considerable extent.

I am, Sir, Your obedient servant,

(Signed) H. B. BUTLER.

R. B. Pilcher, Esq.. Registrar and Secretary. Institute of Chemistry, 30, Russell Square, W.C. 1.

At the second meeting the Committee had the advantage of the views of Mr. John Rogers, F.I.C., Chairman of the Explosives Trade Employers' Association, and of Major Adrian Dingli, barrister-at-law, to both of whom the thanks of the Council have been accorded for their help and advice. The Committee, in their Report to the Council, expressed the opinion that, in any case, the Institute should not seek representation, in the capacity of a trades union, on any Industrial Council under the Whitley Scheme. They -tated that in many of the more important industries Industrial Councils had not, as a matter of fact been formed; and the number of chemists affected in the less important industries was so small that they could not be expected to secure representation. In the majority of the Councils, moreover, it would be impossible to secure representation of every profession, trade and craft employed in any one industry.

The Committee felt, however, that the Institute could be of great assistance to such Councils in technical matters, and that it would be desirable to find some means whereby the Institute could be rendered easily available as an impartial referee body, both in the interests of the employers and of their chemists: thus, in the event of the formation of a Council (corresponding to the Whitley Councils) in connection with the Civil Service, the Institute might represent chemists in Government employ.

After full discussion, the Committee decided to recommend:

The General Purposes Committee was thereupon authorised to proceed with the matter, and the following letter was forwarded to the Minister of Labour on June 4th:—

<sup>&</sup>quot;That the Council consider the desirability of setting up a Special Committee which should endeavour to secure recognition as an advisory authority in connection with difficulties affecting the interests of qualified chemists (Fellows and Associates) in their professional appointments: such Committee to investigate the steps to be taken to secure such recognition, to define more closely its functions and the method of procedure to be adopted, and to report to the Council thereon."

THE RT. HON. SIR ROBERT S. HORNE, K.C., M.P.,
MINISTRY OF LABOUR, MONTAGU HOUSE, WHITEHALL, S.W. 1,
4th June, 1919.

SIR,—I am directed by the Council of the Institute of Chemistry to Great Britain and Ireland to thank you for your letter of the 9th May.

The Council of the Institute have discussed the suggestion that chemists in various industries should approach the Industrial Councils and their constituent associations and trade unions with regard to securing representation on the Industrial Councils. They have also considered the statement that provision has been made for the co-option of persons with special knowledge and experience, not being members of Councils, by means of which the services of technical and scientific experts will be utilised.

The Institute is not seeking representation in a capacity corresponding with that of a trade union on the Councils under the Whitley Scheme.

It is the chartered professional body duly authorised to grant certificates of competency to chemists and to register persons qualified to practise chemistry. Its aims include the elevation of the profession of chemistry and the maintenance of the efficiency, integrity and usefulness of persons practising the same, by compelling the observance of strict rules of membership, by setting up a high standard of scientific and practical efficiency, and, generally, in the words of the Charter, by advancing the attainments, character and status of its members. It includes as Fellows and Associates both employers and employed: works chemists, controlling plant or working in laboratories, private consultants, Government and municipal chemists, and professors and teachers of chemistry, as well as managers, directors and owners of factories.

To secure direct representation of professional chemists on the Whitley Industrial Councils commensurate with the importance of the science of chemistry to industry would be difficult. The Institute, however, as the chartered professional authority for chemists, could be of assistance to the national and higher sectional Councils as an impartial referee in the interests both of employers and their chemists, when questions arise in which chemists

are concerned.

There is no organisation so fully representative of the interests of qualified chemists as the Institute of Chemistry. The Council believe that the Institute's prestige and character are such that both employers and the qualified chemists on their staffs would approve of the above proposal, while its assistance in a consulting and advisory capacity would be valuable in all matters of technical importance such as those referred to in the Whitley

Report (para. 16, especially sections (vii.) to (x.)).

The Council of the Institute will be glad, therefore, of your advice as to the best means for securing representation in an independent advisory capacity on the various higher Joint Councils, including those for the Civil Service, when matters affecting the interests of chemists are under consideration. They are prepared to nominate delegates to discuss the matter with you if you consider it would be helpful and will kindly make an appointment at your convenience.

I am, Sir,
Your obedient servant,
(Signed) Richard B. Pilcher,
Registrar and Secretary

## Ministry of Health and Scottish Board of Health.

Ministry of Health.—The Public Appointments Committee, jointly with representatives of the Society of Public Analysts, have carefully watched the progress of the various Bills for the establishment of a Ministry of Health, and have kept in touch with the promoters. With the approval of the Councils of the Institute and the Society the following memorandum was prepared and forwarded to Dr. Addison in March:

THE RIGHT HON. CHRISTOPHER ADDISON, M.D., M.P., MINISTRY OF RECONSTRUCTION,

2. Oueen Anne's Gate Buildings, Westminster, S.W. 1.

SIR,-Realising that the institution of a Ministry of Health affords an opportunity of securing for the nation the adequate utilisation of chemical science in the service of the new department, a Joint Committee of the Councils of the Institute of Chemistry and of the Society of Public Analysts has had under consideration the question how the Institute and the Society may best co-operate with the Health Ministry in the work which lies before it.

The Institute of Chemistry is a body incorporated under Royal Charter, and, thereby empowered to examine and grant qualifications to properly trained chemists: the Society of Public Analysts is a recognised association of analytical chemists. The majority of qualified British chemists belong to these two bodies, who can, therefore, speak authoritatively on their behalf. Both bodies are well known to Government authorities.

It is obvious that chemistry has a very direct bearing on the health and welfare of the community. Every public authority is faced by problems which can be solved only by its aid. Among these problems the following

may be mentioned :-

1. Control of the purity of food and drugs (Sale of Food and Drugs Acts, 1875-1907).

2. Control of water supplies.

3. Treatment and disposal of sewage and trade refuse.

4. Examination and control of disinfectants.

5. Control of gas supply.

6. Detection of poisons in criminal and other cases.

Moreover, chemical knowledge and experience are indispensable to the efficient administration of a number of Acts affecting the health of the community, such as those relating to factories, chemical manufactures, dangerous

trades, rivers pollution, etc.

In all these matters the responsibility rests ultimately on the chemist, and he must, therefore, be efficiently trained and highly skilled in his profession. In connection with the Sale of Food and Drugs Acts, it may be recalled that the Local Government Boards, by whom the appointments of Public Analysts under Local Authorities must be confirmed, specifically accept the Diplomas and Examinations of the Institute of Chemistry as proof of competency.

The control of the purity of food supplies and of the drugs sold to the public is essentially the function of the Public Analyst, while the present knowledge of the analysis of food and drugs is mainly due to the investigations which have been made by the professional chemists of this country, who, on their own initiative and at their own expense, have studied in their laboratories the problems involved and have worked out their solution.

That the work of Public Analysts has not in the past been properly appreciated is, the Committee is convinced, largely due to the fact that there has not been sufficient co-operation between them and the departments concerned with such questions. It is hoped that this lack of contact may be remedied, since it has even gone so far that Orders have recently been promulgated under Government authority without ascertaining from Public Analysts whether there was any possibility by chemical, or other means, of determining whether such Orders could be complied with.

Although a few years ago the Local Government Board for England and Wales took the very commendable step of establishing a chemical laboratory and engaged the services of an able chemist, yet the fact remains that the Board possessed no chemical officer occupying a position corre-

sponding with that of the Chief Medical Officer of the Board.

The Committee recognise, of course, the importance of the work carried out in the Department of the Government Chemist, and in laboratories attached to other Departments, but they feel, speaking generally, that the services of professional chemists, other than those engaged in such Depart-

ments, have never been utilised to full advantage.

For these reasons the Joint Committee recommend that a Consultative Council, consisting of professional chemists, including representatives of the Institute of Chemistry and the Society of Public Analysts, should be established to advise the Ministry on all matters on which chemistry has a direct bearing, and that such a Council shall have direct access to the Minister of Health.

We would ask you to give this recommendation your very careful consideration, and we hope to be favoured with your reply at your early convenience.

We are, Sir,

Your obedient servants,
HERBERT JACKSON,
President of the Institute of Chemistry.
SAMUEL RIDEAL,
President of the Nociety of Public
Analysis and other Analytical Chemists.

The Councils of the Institute and the Society expressed their readiness to send delegates to confer with Dr. Addison on the relations of chemistry to matters of public health, and the Federal Council for pure and applied chemistry agreed to send representatives to support the views expressed in the memorandum on the general ground of the importance of chemistry in public affairs. Although Dr. Addison was unable to make an appointment to receive a deputation before the Bill became law, the Councils have learned that two chemists will be appointed to the Consultative Council on Medical and Allied Services. The Council of the Institute having been requested to nominate representatives, have forwarded the names of Sir William Tilden, Past President, and Mr. A. Chaston Chapman.

Scottish Board of Health Bill .-- In response to a memorial presented by the Association of Public Analysts of Scotland, Mr. Robert Munro, K.C., M.P., Secretary for Scotland, received a deputation of professional chemists at the Scottish Office, Whitehall, on Saturday, May 3rd, 1919, when the importance of chemistry in relation to the Scottish Board of Health Bill was discussed. The deputation consisted of: Mr. R. M. Clark, B.Sc., F.I.C., President, and Dr. J. F. Tocher, F.I.C., representing the Association of Public Analysts of Scotland: Mr. A. Chaston Chapman, F.I.C., Dr. J. T. Dunn, F.I.C., Members of Council, and Mr. Richard B. Pilcher, Registrar, representing the Institute of Chemistry; Mr. B. D. Porritt, B.Sc., F.I.C., representing the Scottish Local Sections of the Institute: and Dr. Samuel Rideal, F.I.C., President, and Mr. P. A. Ellis Richards, F.I.C., Hon. Secretary, representing the Society of Public Analysts.

Mr. R. M. Clark (Glasgow) introduced the deputation. He said that the Institute of Chemistry represented professional chemists, and that its qualifications were formally recognised by the Local Government Board for Scotland in connection with the appointment of Public Analysts. He explained that the Society of Public Analysts was the representative organisation of Public Analysts generally. He said that the Public Analysts were in favour of the Bill as a whole. He referred to the unanimous request of the whole of the Public Analysts of Scotland and to the memorial which had been forwarded by the Association of Public Analysts of Scotland. In view of the importance of chemistry to matters of State, and especially matters of health, it was highly necessary in the public interest that the Secretary for Scotland should consider the inclusion of a qualified professional chemist on the proposed Board of Health. Since the Food and Drugs Acts were not

properly administered, it was necessary in any case that a professional chemist should be attached to the Board, and that the profession of chemistry should be represented on the Consultative Councils under the Board. Mr. Clark mentioned many health questions in which chemical advice and assistance were necessary, and gave particulars which evidenced improper administration. Referring to the Sale of Food and Drugs Acts, which would come under the control of the new Board, he showed that the lack of closer touch between the Local Government Board and Public Analysts in the past had resulted in inadequate and uneven administration. Public Analysts had no proper security of tenure of office, and were inadequately remunerated for their services. In many places the Acts were entirely ignored.

Dr. J. F. Tocher said that it was against the public interest to overlook the importance of chemistry in public health matters. Chemists were required, not only for the administration of the Sale of Food and Drugs Acts, but also in connection with the administration of the Alkali, etc., Works Regulation Acts, the Rivers Pollution Acts, and other Statutes. He noted also that the Scottish Board of Health Bill embodied proposals for the conduct of research, which included research in chemical problems. He summarised the qualifications of a chemist as defined by the Regulations of the Institute of Chemistry, and claimed that the profession of chemistry should be accorded adequate recognition. The administration of the Sale of Food and Drugs Acts in Scotland had never been satisfactory, owing to the fact that there had been no chemical officer a sociated with the Local Government Board. In the public interest it was highly desirable that Public Analysts should always be consulted by local authorities in matters relating to the administration of the Sale of Food and Drugs Acts, and that they should be properly recognised as officers of the local authorities employing them. A principal chemical officer should be appointed as the advisor of the Board in all chemical matters, including, of course, those connected with food and drugs. There appeared to be an impression in the minds of the authorities that medical officers of health were properly qualified to advise in chemical matters, and that, therefore, they should control the local administration of the Sale of Food and Drugs Acts. The position of the Medical Officer of Health under these Acts, however, was that of a sampler, and, in this respect, he was in a similar position to that of a police officer and an inspector of weights and measures. It was highly necessary that a chemical officer should be appointed, either as a member of the Board of Health or as a responsible officer of the Board, to advise on chemical matters relating to the health of the community.

Dr. Rideal supported the two previous speakers in their remarks with regard to the lack of proper contact between the Local Government Boards and Public Analysts. The latter were hardly ever informed of regulations issued by the Board having a direct bearing on their work under the Sale of Food and Drugs Acts. There was a definite need for chemical authority at headquarters. At present the Boards looked to their medical officers for chemical information, but there should be professional chemical officers with a proper knowledge of chemical technique, and there should be proper

co-ordination of the work.

Mr. Chaston Chapman said that the war had made every one realise the increasing importance of chemistry in governmental affairs. The public was beginning to realise its bearing on all technical processes. Its relation to public health matters was no less important. If the great aim of the Board of Health was to create a healthy environment, it was absolutely necessary

that chemists should be intimately associated with this work. All matters relating to the purity of water, air, food and drugs, came essentially within the function of the chemist. He emphasised, therefore, the necessity of having a chemical officer attached to the Board. If it was found impossible, for administrative reasons, to increase the number of members of the Board, he urged the extreme desirability of the representation of chemistry on the Consultative Councils.

Mr. Munro said that he was glad to know that professional chemists supported the measure as a whole. The Bill would be before the House of Lords on Tuesday (May 6th . He had listened with care and attention to the comprehensive and cogent arguments which had been advanced. The remarks of the deputation might be divided into two sections: (i.) the connection of chemists with the Scottish Board of Health, and (ii.) the amendment of the present Sale of Food and Drugs Acts. In the first, they had concentrated on the importance of the profession of chemistry being represented on the Board of Health. It was obviously impossible to include representatives of all interests-or even of all important interests-as in that case it would not be a Board, but a mob. Science would be represented—if not adequately represented—by two medical men. The Government was not able to add even one more member without raising further claims. Dentists, veterinary surgeons, pharmacists, sanitary inspectors, and so forth, would all wish representation on the Board. While, however, there was no possible chance of a Government amendment giving effect to the proposal made by the deputation to include a professional chemist on the Board itself, he thought that the objects of the deputation would be attained (i.) if a professional chemist was included on the staff as a consultative officer, with suitable standing, and (ii.) by ensuring that chemistry was properly represented on the Consultative Councils. He would confer with his colleague, Dr. Addison, on the whole matter.

With regard to many of the remarks which had been made with reference to the Sale of Food and Drugs Acts, he would be glad to reconsider them when future legislation in that connection was under consideration.

Dr. Dunn, on behalf of the deputation, cordially thanked the Secretary for Scotland for granting the interview. The deputation then withdrew.

A letter was subsequently received from Mr. Clark thanking the Institute for the support afforded his Association in the matter.

## The Fellowship of the Institute.

The Council are still receiving a steady flow of applications for the Associateship and Fellowship of the Institute under the Regulations based on the decision of the Extraordinary General Meeting held in April, 1918.

Letters of recommendation from Members of the Institute in favour of Candidates for admission as Fellows under the new Regulations indicate that there is still some misapprehension of the policy of the Council in this matter.

Previous to 1917 Associates by examination were admitted to the Fellowship provided they showed to the satisfaction of the Council that they had been continuously engaged for three years since their admission to the Associateship in the practice and application of chemistry, and were recommended by a Fellow. These Associates had passed the Institute's own examinations, and the three years' approved experience entitled them to admission to the higher grade.

When it was decided by the Institute, in the interests of organisation of the profession, to elect trained and competent chemists to the Associateship without examination, the Regulations for admission to the Fellowship were amended. In future all Associates, other than those admitted prior to August, 1917, who wish to become Candidates for the Fellowship, must satisfy the Council that they have complied with the Regulations now in force, *i.e.*:—

"Every such Associate will be required to pass an examination, or to produce evidence:—

"(i.) That he has carried out original research of sufficient merit in the opinion of the Council; or

"(ii.) that he had devised processes or inventions of sufficient merit in the opinion of the Council; or "(iii.) in special circumstances, that he is possessed of knowledge and ability equivalent, in the opinion of the Council to having fulfilled the conditions contained under (i.) or (ii.) above."

The examination referred to will be on the lines of the examination for the Associateship, with such modifications in each individual case as the Council may deem desirable in gauging the value of the experience of the Candidate or of a thesis or published record of original work.

In the interpretation of (i.) the expression "original research of sufficient merit" is used in a wide sense, but the Candidate will be required to show that he has materially contributed to the advancement of chemical knowledge.

It is intended to maintain a high standard for the Fellowship, and it is the considered opinion of the Council that, in general, all Members of the Institute should first pass through the Associateship stage.

In certain circumstances, however, where Candidates have acquired eminence in the profession and have reached a certain age, the Council are prepared to elect such Candidates direct to the Fellowship. Such Candidates are elected only if they show that they have complied with the conditions laid down in the Regulations for election of Associates to the Fellowship with regard to both the quality of their work and the responsibility of their positions.

To those who may feel aggrieved that they have been recommended to apply for the Associateship after applying for the Fellowship, it may be pointed out that there are many grades of Candidates: some, perhaps, are approaching the standard necessary for the Fellowship; but the Council hold that no injustice is done by delaying the grant of the higher diploma.

## Local Sections.

ireland.- The first general meeting of the Irish Local Section was held at the Royal College of Science, Dublin, on November 26th, 1918, when the Officers and Committee were appointed. Two general meetings have been held, at the first of which the Chairman, Dr. W. E. Adeney, delivered an address on "The Bio-chemical Examination of Water for Technological Purposes." The address dealt more particularly with the value of the five-day oxygen absorption test. and the lecturer demonstrated experimentally the method of carrying out the test. At the second meeting, Mr. I. W. Parkes, Chief Chemist, Messrs, Kynoch-Arklow, Ltd., delivered a lecture on "The Manufacture of Furning Sulphuric Acid (Oleum) by the Ferric Oxide Contact Process." The lecture. which was illustrated by slides of the plant employed, was followed by an interesting discussion as to the feasibility of combining the process with the manufacture of superphosphate

Hon. Sec.: A. G. G. LEONARD, A.R.C.S.I., B.Sc., Ph.D., F.I.C., 18, Belgrave Road, Rathmines, Dublin.

Edinburgh and East of Scotland.—Since the inauguration of the above Section two ordinary meetings have been held at which papers were read by the Chairman (Dr. Drinkwater) and Dr. A. Lauder respectively. The Committee has met on several occasions, and matters of local and general interest have been discussed.

At the request of several members information is being collected regarding the facilities afforded for consulting chemical literature in the various libraries established in the city.

At an interview with the Secretary for Scotland concerning the Scottish Board of Health, in which the Institute took part, the East of Scotland Section was officially represented by Mr. B. D. Porritt.

Hon. Sec.: B. D. W. Luff, F.I.C., 85, Ashley Terrace, Edinburgh.

Glasgow and West of Scotland. Steps are being taken to prepare an interesting programme for the forthcoming session, and it is hoped that all Fellows and Associates within the district will join the Section and attend its meetings.

Hon. Sec.: T. A. Wilson, F.I.C., 91, New Road, Ayr.

Liverpool.—Altogether eighteen monthly meetings have been held at Liverpool, and a strong interest has been developed among the members of the Section in the affairs of the Institute and the profession generally. The Hon, Secretary reports that "it appears to us that the formation of Local Sections has proved a distinct advance in policy of the Institute. Better contact with our confreres was sorely needed, and the development of our social activities which we are now devising, e.g., our annual dinner and a joint picnic with the Manchester Section, will still further assist fusion of men who for some peculiar reason seem very reticent at first. During the consideration of the social activity, one of our younger members accidentally revealed that he is engaged on a quest for a catalyst to effect social reactions, solutions and fusions." New members will be welcomed, and the Section is looking forward to holding a dinner in October, when the President and Lady Jackson, and the Registrar and Mrs. Pilcher are expected to be present.

Hon. Sec.: John Hanley, F.I.C., 7. University Road, Bootle.

London and South Eastern Counties.—A social meeting of the London and South-Eastern Counties Section was held at the Institute on May 17th, Prof. Patrick H. Kirkaldy in the chair. About 200 members and visitors were present.

In opening the proceedings the Chairman outlined the

objects of the Section, emphasising the desirability of promoting social intercourse among the members of the Institute, and affording opportunities for the discussion of matters affecting the welfare of chemists generally. Sir Herbert Jackson, President, in wishing success to the Section, said it was a pleasure to him and the older Fellows to meet the younger members of the profession and to hear their views on the matters which came up for discussion.

A meeting of the Section was held on June 25th, 1919, to discuss the economic position of chemists.

Mr. C. S. Garland moved a resolution to the effect that the Council should be asked to take action with a view to securing a minimum salary of £300 per annum for members of the Institute in the London district. After discussion, it was finally decided, on the proposition of Prof. J. S. S. Brame, to invite the views of the other Local Sections on the matter before further action be taken.

Dr. Brady moved a resolution to the effect that the Council should be asked to collect information, which would be regarded as strictly confidential, as to the salaries of members of the Institute, with a view to preparing an analysis of the remuneration of chemists in various classes of employment. It was agreed that the matter be left in the hands of the proposer to be brought before the Council.

The membership of the London Section now stands at 181. It is earnestly requested that all Fellows and Associates living in the London area will join and take part in the meetings to be held during the forthcoming session.

Hon. Sec.: WILLIAM BACON, B.Sc., F.I.C., 27, Walbrook. London, E.C. 4.

Manchester.—Meetings of the Manchester Section have been well attended, about forty members usually being present.

A very successful "Social" afforded an excellent opportunity for members to become better acquainted, and was much appreciated.

The Hon. Secretary desires to make the Local Register as complete as possible and will be glad to receive the names of any members in the Manchester district who were not advised of meetings held during last winter.

Hon. Sec.: D. Cardwell, M.Sc., F.I.C., 50, Alexandra Road, South Manchester, S.W.

Swansea.—The South Wales Section at its inaugural meeting consisted largely of members engaged at H.M. Factory, Pembrey, many of whom have been drafted to other districts. The Section has, therefore, suffered considerable loss in members, but it is hoped that all members in the district will support the Local Section by their presence at meetings whenever possible.

Hon. Sec.: A. J. Shelton, A.C.G.I., F.I.C., 10, Park Road, Clydach S.O., Glam,

## The Constitution of the Institute.

The argument is occasionally brought forward that the Institute of Chemistry was founded to advance the profession of Consulting and Analytical Chemistry only, and that its membership should be confined to chemists engaged in consulting and analytical practice.

The petition for the Institute's Charter, and the Charter itself, however, show that there is no ground for this narrow

interpretation of the ideas of the Founders.

When the Charter was granted (1885) the number of chemists was much smaller than now, and the profession of chemistry was less recognised; the Pharmacy Act of 1868 had to some extent, for the purposes of that Act, attached the title chemist to qualified persons engaged in the sale and dispensing of poisons; and it was necessary to distinguish chemists in the true sense of the word from those engaged in pharmacy.\* The term Analytical and Consulting Chemist was used, therefore, in the petition and in the Charter of the Institute. The petition pointed out the importance of "Analytical and Consulting Chemistry" in its bearings on legal investigations, public health, food adulteration, agriculture, arts, and manufactures; and referred to persons competent to practise analytical chemistry and to advise in technological chemistry, and to their training. specifically mentioned that the Institute comprised not only the "leading analysts in the Kingdom," and the "chemical advisers of various departments of the Government," but also

<sup>\* &</sup>quot;III. Chemists and Druggists within the Meaning of this Act shall consist of all Persons who at any time before the passing of this Act have carried on in Great Britain the business of a Chemist and Druggist in the keeping of open shop for the compounding of the prescriptions of duly qualified medical practitioners, also of all assistants and associates who before the passing of this Act shall have been duly registered under on according to the provisions of the Pharmacy Act, and also of all such persons as may be duly registered under this Act."—Pharmacy Act, 1868.

"nearly all the Professors and Teachers of theoretical and applied chemistry in the Kingdom," and stated the intention of the petitioners to include all the members of the old Institute as members under the Charter of the new Institute, if it should be granted. The statement was made that no person was admitted a member without producing evidence satisfactory to the Council that he was proficient in the Science of Analytical and Applied Chemistry and in the allied Sciences.

"A high standard of scientific and practical proficiency" was what the Institute was expected to demand of its members; and it sought the Charter because it wished, among other things, to be competent to certify to the attainment of that

high standard.

In a letter written by Sir Edward Frankland, the first President, to the *Chemical News*, in December, 1885, the statement is made that the great mass of the Members of the Institute "consists of chemists in factories, public analysts, and chemists in Government departments and in the employ of the corporations of our large towns. These are supplemented by professors, teachers, manufacturers, and others who consider that the better training of young chemists, most of whom must of necessity earn their livelihood by the exercise of their profession, is an object which it is desirable to encourage."

The "History of the Institute" (1877—1914)—published in August, 1914—contains an abstract of a speech by Sir William Tilden, during the first year of his presidency (1891)

bearing on this subject.

Sir William, who was a Member of the Council when the Charter was granted, said that there appeared to be a strong impression that the Institute was founded mainly in the interests of the analytical and consulting chemists. It would be very difficult to maintain a hard and fast division between professorial and professional chemists, and he deprecated any conflict between branches of the profession. The Institute had not been founded for the benefit of the analytical chemist only. The term "analytical and consulting chemists" was

used in the Charter chiefly to distinguish such chemists from the pharmaceutical chemists and druggists. The Institutwas intended to embrace the whole profession.

Some Fellows and Associates who admit that the petitioners for the Charter contemplated the inclusion of chemists engaged in industry, object to the admission of teachers and others who, though properly qualified, do not derive their professional remuneration from analytical, consulting, or technological work. The quotations already made from the Petition, and the fact that the proposals of the Petition were carried out in the Charter, show clearly that the intention was to include teachers in the membership, provided that they gave proof of the required competence; and the experience of the war has abundantly shown that many chemists, previously engaged solely in teaching, were able to apply themselves with skill and success to the operations of analytical and industrial chemistry. Moreover, the qualifications for the Fellowship, as given in Section 5 of the Charter, recognised the admission of "a Professor or Demonstrator of Practical Chemistry at some known University, College, or Medical School "-which expression also occurred in the original Articles of Association (1877).

Competence in analytical and applied chemistry and in the allied sciences is the requisite toundation for the practice of the profession in any branch, and the Institute is required to ensure that every member possesses that foundation. At the time of his admission the future career of a candidate for membership may be yet undetermined, and the Council does not attempt to determine it, further than to retain the power of removing a member if he becomes engaged in an occupation inconsistent with membership. To hold that the teaching of chemistry is such an occupation, would stultify the whole work of the Institute as a body claiming to set the mark of competence on the chemist, and it would be a contradiction of the ideals of the Institute to exclude a class of chemists so intimately associated with the prosecution of chemical research and the advancement of chemical science.

## Obituary.

Pency Watson Copeland died at Derly on February 22nd in his thirty-fifth year. Educated at the Municipal Secondary School and the Technical College at Derby, he graduated as B.Sc. with Honours in chemistry at London University, and passed the Intermediate Examination of the Institute in 1908, and the Final, in mineral chemistry, in 1909. After acting for a time as student assistant and research student at the Derby Technical College, he joined the staff of Mr. Archbutt in the Chemical Department of the Midland Railway Company, where he remained five years until 1914, when he was appointed Chief Chemist to the Derby Gas Company, which position he held at the time of his death. He was elected a Fellow of the Institute in 1914.

LIEUT. STEPHEN HEPWORTH DENNETT. R.A.F., after service in France and Salonika, was accidentally killed in May, 1917. He was born on May 12th, 1893, educated at Handsworth and Atherstone Grammar Schools, and, having entered the University of Birmingham for his professional training, became a registered Student of the Institute in 1910. At the time of his enlistment he was working with Mr. R. P. Page, F.L.C., Public Analyst, Portsmouth, in preparation for the Examination for the Associateship of the Institute.

Douglas Rayment Keiler was born on September 27th, 1886, and educated at St. Albans Grammar School. Having matriculated at the University of London, he studied under Prof. Armstrong at the City and Guilds Central Technical College, gained the College Diploma, and graduated as B.Se, with Honours in Chemistry. Subsequently he was engaged with Mr. R. H. H. Stanger, in Westminster, and from 1913 as chemist to the Plaissetty Manufacturing Company, at Leyton, and the London Thorium Company, at Bow; but he returned to Mr. Stanger in July, 1918, and died in the month of October following. He was registered as a Student of the Institute in 1908.

FREDERICK WILLIAM DYSON MARSHALL died at Ealing on March 27th, 1919. The son of Mr. William Marshall, F.I.C., he was born at Radcliffe, near Manchester, on August 7th, 1885, was educated at the Rochdale and Manchester Grammar Schools, and matriculated at the University of Manchester in 1902, where he took the degree of B.Sc. in 1905, and M.Sc. in 1906. After some experience in his father's laboratory he went to Cambridge, where he graduated as B.A. in 1910, proceeding to M.A. in 1915. In 1910 he was appointed Assistant Master at the Westminster City School. He enlisted in October of 1915, and became a corporal in the R.A.M.C. (T.), but was transferred to reserve in April, 1917, and returned to his appointment which he still held at the time of his death. He was

registered as a Student of the Institute in 1902, and was elected an Associate in 1918.

SIR BOVERTON REDWOOD died of heart failure, following diphtheria, at The Cloisters, Regent's Park, London, on June 4th, 1919, in his seventy-fourth year. The eldest son of Prof. Theophilus Redwood, F.I.C., he was born at Boyerton, Glamot sunshire, was educated at University College S. hool London, and received his training in chemistry in the laboratories of the Pharmaceutical Society under his father. In 1869 he was appointed Secretary to the Petroleum Association, and from that time devoted special attention to the petroleum industry, with the early history and development of which his name is intimately associated. He was a witness before the Select Committee on Petroleum of the House of Lords in 1872, and worked with Sir Frederick Abel in determining the close test for the flash point of petroleum, 73° F., which was adopted in 1879. With Sir Vivian Majendie, then Chief Inspector of Explosives, he travelled in Europe and America, during 1883 and 1886, investigating the methods of handling, storage and use of petroleum oil and spirit. Also, in 1886, he devised the Redwood viscometer. In 1892 he visited Egypt to advise on the transport of oil through the Suez Canal. He held appointments as Adviser on Petroleum to the Admiralty, the Home Office, the India Office, and the Colonial Office, was Consulting Adviser under the Petroleum Acts to the Corporation of London, and Adviser in Petroleum Transport to the Port of London Authority and to the Thames Conservancy. On many occasions he acted on Commissions and Juries of International Exhibitions, both at home He was a member of the Delegacy of the City and Guilds (Engineering) College, Imperial College of Science and Technology, and served on the Royal Commission on Oil-Fuel, the War Committees of the Board of Trade, the Ministry of Munitions (Petroleum Supplies Branch , and the Admiralty Board of Inventions and Research. He delivered Cantor lectures before the Royal Society of Arts on "Petroleum and its Products," 1886, and on " Petroleum : Its Production and Use," 1887; was the author of many reports and articles, and, jointly with the late Captair J. H. Thomson, of a handbook, on the same subject. The third edition of a larger treatise, in three volumes, written jointly with Major A. Cooper-Key, was published in 1913. He was knighted in 1905, and received a baronetey in He was also a Chevalier of the Order of Leopold. He was the first President of the Institute of Petroleum Technologists, a Past President of the Society of Chemical Industry, Past Vice-President of the Institute, and a Past Member of Council of the Chemical Society.

He was buried at Hampstead Cemetery on June 7th, when the Institute

was represented by the Registrar.

Ferribee Sadler was born on May 5th, 1895, and educated at Tam worth Grammar School and Rydal Mount, Colwyn Bay. Having matriculated at London University, he entered on his professional training, and was registered as a Student of the Institute at the University of Birmingham in 1912. He was reported missing on April 21st, 1917, when he was serving as a Lieutenant in the Durham Light Infantry, attached to the Royal Flying Corps.

## The Library.

- A m.s. Commercial Organic Analysis. 4th Edition, entirely re-written Volumes I, and II., edited by Henry Leffmann and W. A. Davis Volumes III. to VIII., edited by W. A. Davis and Samuel S. Sadtler, Volume IX., edited by W. A. Davis. London, 1910—1917.
- Coal and its Scientific Uses. William A. Bone. London, 1918.
- 8: Werks Analysis. John Oliver Arnold and F. Ibbotson. 3rd Edition. London, 1907.
- Practicel Agricultural Chemistry. S. J. M. Auld and D. R. Edwardes-Ker. London, 1913.
- Useas, Their Origin, Composition and Manufacture, William Tibbles, London, 1912.
- Physica-Chemical Tables, John Castell-Evans, Volume I., Chemical Engineering and Physical Chemistry, London, 1902. Volume II., Physical and Analytical Chemistry. London, 1911.
- The Analysis of Dyestuffs. Arthur G. Green. 2nd Edition. London, 1916. Introduction to the Rarer Elements. Philip E. Browning. 4th Edition. London and New York, 1917.
- Text-book of Inorganic Chemistry. Edited by J. Newton Friend. Volume I., including Part I. and an Introduction to Modern Inorganic Chemistry by J. Newton Friend, H. F. V. Little, W. E. S. Turner, H. Vincent, A. Briscoe. 2nd Edition. London, 1917. Volume IV. Aluminium, and Congeners, including the Rare Earth Metals. H. F. V. Little. London, 1917. Volume V., Carbon and its Allies. R. M. Caven. London, 1917.
- The Analysis of Non-Ferrous Alloys. Fred Ibbotson and Leslie Aitchison. London, 1915.
- Examination of Hydrocarbon Oils and Saponifiable Fats. D. Holde. Translated from the 4th German Edition by Edward Mueller. London and New York, 1915.
- Practical Physiological Chemistry. P. B. Hawk. 6th Edition, revised and enlarged. London, 1919.
- Catalysis in Industrial Chemistry. G. G. Henderson. London, 1919.
- A System of Physical Chemistry. William C. McC. Lewis. 2nd Edition. Volume I., Kinetic Theory. London. 1918. Volume II., Thermodynamics. London. 1919. Volume III.. Quantum Theory. London. 1919.

- Chemical Analysis of Special Steels, Steel-making Alloys and Graphites.

  Charles Morris Johnson. 2nd Edition. London and New York, 1913.
- The Rare Earths: Their Occurrence, Chemistry and Technology, S. I. Levy, London, 1915.
- Assaying and Metallurgical Analysis. E. L. Rhead and A. Humboldt Sexton. New impression. London, 1914.
- The Theory and Use of Indicators. E. B. R. Prideaux. London, 1917.
- Food and Drugs. Ernest J. Parry. Volume I., The Analysis of Food and Drugs (Chemical and Microscopical). London, 1911.
- Applied Analytical Chemistry. Vittorio Villavecchia. Translated by Thomas H. Pope. Volumes I. and II. London, 1918.
- Analytical Chemistry. F. P. Treadwell and W. T. Hall. Volume I., Qualitative Analysis. 4th English after the 8th German Edition. London and New York, 1916.
- Chemistry of Food and Nutrition. Henry C. Sherman. 2nd Edition. New York, 1918.
- The Chemistry of Colloids. W. W. Taylor. 3rd Impression. Lordon, 1918.
   Soil Conditions and Plant Growth. Edward J. Russell. 3rd Edition. London, 1917.

## FELLOWS. ASSOCIATES, STUDENTS AND CANDIDATES FOR EXAMINATION WHO ARE SERVING OR WHO HAVE SERVED WITH H.M. FORCES.

(Supplementary List.)

#### FELLOWS.

Kinnersley, H. W., Lieut, R.A.O.C.

#### ASSOCIATES.

Browne, W. L., Corporal, Lincoln Regiment. Gibson, S., Captain, A.C.C.

#### STUDENTS.

Burtt, A. W., Friends' Ambulance Unit (B.R.C.S.).

Evans, T. I. J., Lieut.

Taylor, J. G., Mechanic, R.N. Experimental Station.

Ward, H., Lieut., R.G.A.

Since the publication of the List given in Proceedings, Part II., 1919, entries have been altered in the following cases:—

#### FELLOWS.

Campbell, L. E., Captain, R.A.O.C.

Carruthers, G. M., Lieut., Lancashire Fusiliers (killed in action).

Elliott, Stanley, Major, R.A.M.C., M.B.E.

Frazer, D. R., Captain, M.G.C.

Genmell, A., Captain Commandant, Command School of Gas Defence (deceased).

Harrison, E. F., Lieut, Colonel, C.M.G., R.A.M.C., Officer of the Legion of Honour (deceased).

Hawley, Herbert, Lieut., R.A.O.C.

Hinks, Edward, Acting-Major, A.O.D., M.B.E.

Jones, G. C., Lance-Corporal, United Arts Anti-Aircraft.

Ladell, W. R. S., Acting-Major, A.O.D.

Levy, L. A., Captain, R.E.

Monier-Williams, G. W., Major, R.E., O.B.E. (Military Cross).

Murphy, Paul, Major, R.E.

Rid al, Eric K., Lieut., General List, M.B.E.

Smith, T. A., Lieut., R.A.F.

Thompson, James, Captain, General List.

Walker, F. G. C., Brevet-Major, R.E. (Military Cross).

#### ASSOCIATES.

Georgi, C. D. V., Captain, R.E., O.B.E. (mentioned in despatches). Hampson, R. E. V., Captain, R.E. Macintyre, E. G., Lieut., R.A.F. (Officier de l'Ordre du Nichan Iftakar). Miller, J. B., Captain, R.E. (Military Cross).

#### HONOURS.

#### FELLOWS.

Mr. Samuel Jackson, Superintending Chemist, Buckingham and Carnatic Mills, Madras, has been appointed an Officer of the Order of the British Empire.

Colonel William Robert Sp. th. Sheriff of London, has received the honour of Knighthood.

## The Register.

Since the publication of Proceedings, Part I., in April, 1919, the Council have elected 29 new Fellows and 292 new Associates; 10 Associates have been elected to the Fellowship, and 61 Students have been admitted; 1 Fellow and 1 Associate have been re-elected. Additions since July 1st will be reported in Part IV.

The deaths of 2 Fellows, 1 Associate, and 3 Students have been reported.

#### New Fellows.

S. = Naval, Military, or Air Service.

Adam. Matthew Atkinson. B.Sc. (Glas.), 57 & 58, Lincoln's Inn Fields, London, W.C. 2. [Consultant; Research; Patents.]

Adie. Richard Haliburton, M.A. (Cantab.), B.Sc. (Lond.), 130, Huntingdon Road, Cambridge. [Lecturer in Chemistry, St., John's Coll., Cambridge; Research.]

Blackshaw, Captain George Neville, O.B.E., B.Sc. (Wales), Government Laboratory, Department of Agriculture, Salisbury, Rhodesia. [S.; Chief Chemist, Govt. Lab., Rhodesia.]

Browning, Kendall Colin, M.A. (Cantab.), 11, Barton Terrace, Dawlish, South Devon. [Govt. Analyst and Prof. of Chemistry, Ceylon; Research.]

Colley, Alfred, "Fairfield," Albert Road, Wolverhampton. [Over thirty years' experience: Chemist, Messrs, Alfred Hickman, Ltd.]

Crocker, James Codrington, M.A. (Cantab.), D.Sc. (Lond.), 11, Lavengro Road, West Norwood, London, S.E. 27. [Senior Demonstrator and Lecturer, S.W. Polytechnic; Research.]

Davies, Samuel Henry, M.Sc. (Vict.), "Ryceroft." New Earswick, York. [Head Chemist, Messrs. Rowntree & Co., Ltd.; Research.]

Dhar, Xil Ratan, M.Sc. (Calcutta), D.Sc. (Lond.), D. es Sc. (Paris), Professor of Chemistry, Muir Central College, Allahabad, India. [Researches examined.]

Dorée, Charles, M.A. (Oxon.), D.Sc. (Lond.), 103. Eurough Road, London, S.E. 1. [Head of Chemistry Dept., Borough Polytechnic; Research; Inventions.]

- Egerton, Captain Alfred Charles Glyn, B.Sc. (Lond.), 29, Wilton Crescent, London, S.W. 1. [Dept. of Explosives Supply, Ministry of Munitions; Research.]
- Forster, Robert Benjamin, A.R.C.S.I., Ph.D. (Berlin), D.Sc. (N.U.I.), Glenside, Prestwich Park, Manchester. [Chemist, Messrs, Levinstein, Ltd.]
- Grey, Egerton Charles, B.Sc. (Sydney), D.Sc. (Lond.), 6. Place Sainte Sulpice, Paris, VI<sup>me</sup> [S.; Public Analyst, New South Wales; Bio-Chemist; Research.]
- Griffith, David Agnew, "Silver Leigh," Poll Hill Road, Heswall, Cheshire, [Univ. Coll., Liverpool; Asst. to Works Manager, Vauxhall Chemical Works, Liverpool.]
- Henshaw, Samuel, Dimsdale House, Wolstanton, Staffs, [Merchant Venturers' Tech. Coll., Bristol; Managing Director, New Acid Co.]
- Hodgson, Herbert Henry, M.A. (Cantab.), Ph.D. (Heid.), B.Sc. (Lond.), 136, Paley Road, Bradford. [Head of Dept. of Coal-Tar Colour Chemistry, Huddersfield; Research.]
- Jackson, Ernest Wilfrid, "Godrevy," Saltburn-by-the-Sea, Yorks. [Over twenty-one years' experience with Messrs, Pattinson and Stead; Research.]
- Jenkins, Henry Charles, A.R.S.M. (Lond.), 815—817, Salisbury House, London, E.C. 2. [Consulting Engineer and Chemist, Nitro-Fixation, Ltd.)
- Longstaff, James Patrick. D.Sc. (Edin.), Central House, Finsbury Square, London, E.C. 2. [General Secretary, Society of Chemical Industry.]
- Lowry, Thomas Martin, D.Sc. (Lond.), F.R.S., 17, Eliot Park, Lewisham, S.E. 13. [Lecturer on Chemistry, Guy's Hospital Medical School; Research.]
- Marshall, Joseph. D.Sc. (Leeds). 11, George Road, West Bridgford, Notts.
  [Research Chemist, Messrs, Boot's Pure Drug Co.]
- McBain, James William, M.A. (Toronto), Ph.D. (Heid.), The University, Bristol. [Lecturer, University of Bristol; Research.]
- Prideaux, Edmund Brydges Rudhall, M.A., B.Sc. (N.Z.), D.Sc. (Lond.), 6, Arboretum Street, Nottingham. [Lecturer and Demonstrator, University College, Nottingham; Research.]
- Murray, Thomas Jenkins, Ph.D. (Leipzig), M.Sc. (Birm), Municipal Technical School, Wolverhampton, [Head of Chemical Department, Technical School, Wolverhampton; S.]
- Paterson, John Hamilton, D.Sc. (Dun.), 3, Park Villas, The Green, Wallsendon-Tyne. [Chief Chemist, Swan, Hunter and Wigham Richardson, Ltd.]
- Redpath, George Christie, 76, Eastbourne Gardens, Monkseaton, Northumberland, [Twenty-seven years] experience with Messis, J. and S. H. Pattinson; Research.]
- Romanes, John William, B.Sc. (Edin.). 13, Merchiston Avenue, Edinburgh, [Managing Director, Lothian Chemical Co.]

- Rule, Alexander, M.Sc. (Vict.), Ph.D. (Jena), Propellants Branch. Ministry of Munitions of War. Storey's Gate. Westminster, London. S.W. [Administrative Officer, Wood Distillation Sub-section, Ministry of Munitions; Research.]
- Storr, Bertram Vincent, M.Sc. (Vict.), 26, The Square, Ilford. [Works and Research Chemist, Ilford, Ltd.]
- Wood, Professor Thomas Barlow, M.A. (Cantab.), F.R.S., Gonville and Caius College, Cambridge. [Reader in Agricultural Chemistry and Draper Professor of Agriculture, Cambridge University: Research.]

#### Fellow Re-elected.

Bedford, Sir Charles Henry, D.Sc., M.D. (Edin.), LL.D. (St. Andrews), The Burmah Oil Co., Ltd., 25, Great Winchester Street, London, E.C. 2.

#### Associates Elected to Fellowship.

- Bennett, George Macdonald, B.A., B.Sc. (Lond.), St. John's College, Cambridge.
- Brightman, Rainald, M.Sc. (Lond.), c/o Messrs. Levinstein. Ltd.. Blackley.
  Manchester.
- Croad, Robin Bruce, "The Coppies," Abbey Road, Rhos-on-Sea, Colwyn Bay.
- Dawson, Daniel Sutherland, B.Sc. (Aberd.), 44, Middleborough Road, Coventry,
- Flint, John Walter, B.A. (Cantab.), 2, Wellington Road, Maidstone, Kent. Hancock, Algie, 2, Ashburn Road, Heaton Norris, Stockport.
- Hutchison, George Lewis, B.Sc. (Lond.), 3. Eliot Vale. Blackheath, London. S.E. 3.
- Kloot, Alfred Aaron, B.Sc. (Lond.), Box 1,980, Johannesburg, South Africa.Ritchie, William Stonebridge, B.Sc. (Lond., 8, West Graham Street, Glasgow.
- Wilson, Major Arthur, M.C., 42B. Wickham Road, St. Johns, London, S.E.

#### New Associates.

Elected and the special provisions of the Regulations adopted by the Council, July, 1917, and July, 1918.

- S. = Naval, Military, or Air Service. M. = Munitions.
- I.I. = Passed the Intermediate Examination of the Institute.
- Anderson, Major John, M.A. (Glas.), B.Sc. (Lond.), Isla Cottage, Bent Road. Hamilton, Scotland. [S.; M.]
- Andrews, William Archibald, B.Sc. (Birm.), 33, Liehtield Street, Rugeley, Staffs. [S.; Research.]

- Appleby, Bert John, 3, Charleville Road, Handsworth, Birmingham.

  [Birmingham Mun. Tech. School; Works Chemist; Research.]
- Arthur, Captain John Stanley, B.Sc. (Lond.), 99, Southfield Road, Oxford, [S.: Research.]
- Ashton, Miss Dorothy, B.Sc. Tech. (Man.), 18. Randlesham Street, Heaton Park, Manchester. [Works Chemist.]
- Aston, William George, 30, The Square, Ilford, Essex. [East London Coll.; Research.]
- Bachrach, Roland, A.R.C.S. (Lond.), The Chestnuts, 196, Denmark Hill, London. [S.]
- Bailes, Henry, B.A. (Cantab.), King's College, Taunton, Devon. [M.]
- Balls, Ernest George, M.C., B.Sc. (Lond.), Orford House, Wellington Road, Wanstead, London, E. 11. [S.; Research.]
- Barrett, Ernest, B.Sc. (Lond.), 121, Algernon Road, Lewisham, London, S.E., 13. [S.]
- Barrett, Frank Leslie, 15, Russell Road, Whalley Range, Manchester, [Bradford Tech. Coll. Dip.; Royal Coll. of Science, Lond.; Research; S.; M.]
- Bayley, Frank, M.Sc., Tech. (Man.), 14, Slade Grove, Longsight, Manchester, [M.: Research.]
- Bean, Philip Leslie, A.R.C.S. (Lond.), Glengariff, Ashburton Road, Croydon, [S.; M.; Research.]
- Beesley, Darrell Webb, 380. Dickenson Road, Longsight, Manchester, [St. Helens Tech. School; Works Chemist.]
- Biffen, Frank Moody, B.Sc. (Lond.), 77, Albany Street, Regents Park, London, N.W. 1. [M.; Govt. Lab.; Research.]
- Blakey, Walter, 569, London Road, Oakhill, Stoke-on-Trent. [Bradford Tech. Coll. Dip.; M.]
- Bousfield, Edward Alexander Robert, B.Sc. (Lond.), 6, de Crespigny Park, Denmark Hill, London, S.E. 5. [S.]
- Brash, William, A.R.C.S., B.Sc. (Lond.), 53, Aynhoe Road, West Kensington, London, W. 14. [Govt. Lab.]
- Brown, Leslie Norman, A.R.C.S. (Lond.), Aberdour House, Beaconsfield Avenue, Dover. [S.; M.; Research.]
- Bull, Frank Henry Charles, B.Sc. (Bris.), 75, North Road, St. Andrews, Bristol. [M.]
- Bury, Charles Rugeley, B.A., B.Sc. (Oxon.), Ellfield, Wootton-under-Edge, Gloucestershire. [S.]
- Campbell, John, A.R.T.C., 56, Clifford Street, Ibrox, Glasgow. [Royal Tech. Coll., Glasgow; M.]
- Carpenter, George Kingsford, B.A. (T.C.D.), 21, Grosvenor Road, Rathmines, Dublin. [Demonstrator in Chemistry, Trinity College, Dublin.]
- Carpenter, Leonard, B.Sc. (Lond.), 143, Palmerston Road, Bowes Park, London, N. 22. [S.; M.]

- Chappel, Edgar John, 22—30, Graham Street, City Road, London, N. 1. [Tech. Inst., West Ham; Research.]
- Chitty, Edward Charles, M.C., 143, Devonshire Road, Forest Hill, London, S.E. 23. [Finsbury Tech. Coll.; S.]
- Clark, Lieut. Cecil Henry Douglas, B.Sc., A.R.C.S. (Lond.), Narbonne House, 71, Narbonne Avenue, Clapham Common, London, S.W. 4, [S.; M.; Research.]
- Cockshutt, Captain John Albert, M.Sc. (Manc.), 27, Hornby Street, Oswaldtwistle, Lancs, [S.]
- Cohen, Lieut, Morris, B.Sc. (Lond.), 21, St. Kilda's Road, London, N. 16, [S.]
- Colles, William Morris, B.Sc. (Lond.). The Chemical Department, Government School of Medicine, Cairo, Egypt. [Asst. Prof., School of Medicine, Cairo; S.]
- Condrup, Carl Oscar, A.R.C.S., B.Sc. (Lond.), 4. Princess Avenue, Muswell Hill, London, N. 10. [8.]
- Cowper, Alfred Denys, M.Sc. (Alberta), University of Alberta, Edmonton South, Alberta, Canada. [S.; M.; Research.]
- Cranston, John Arnold, B.Sc. (Glas.), 16, Belmont Drive, Giffnock, Glasgow.
  [8.; Research.]
- Crofts, Harold, M.Sc. (Dun.), Myrtle Grove, Penwortham, Preston. [Works Chemist.]
- Cronshaw, Harry Brenan, B.A. (Cantab.), Ph.D. (Munich), A.R.S.M., University College, Galway. [Research.]
- Cunnington, Lieut. Francis William Buckland, B.Sc. (Lond.), Heytesbury, 88, West End Lane, London, N.W. [S.]
- Dalton, Captain John, M.C., 64A, Longridge Road, Earls Court, London, S.W. 5. [Tech. Coll., Berne; Sir John Cass Tech. Inst.; S.]
- Dancaster, Ernest Augustus, B.Sc. (Lond.). Pleasant View, 101, Merton Hall Road, Wimbledon, London, S.W. 19. [8.]
- Davies, James Henry, Pumula, Heswall Hills, near Birkenhead. [Chester School of Science and Art; Holt Technical School, Birkenhead; Technical Adviser, Messrs. Lever Bros., Ltd.; M.]
- Davies, Thomas, B.Sc. (Wales), Penbank, Clydey, Llanfyrnach, S.O., Pem. [8.]
- Day, James Nelson Edmund, A.R.C.S., B.Sc. (Lond.), 24, Marlborough Road, St. Albans, Herts. [M.]
- Dehn, Frank Bernard, Ph.D. (Jena), M.Sc. (Manc.), Bridge House, 181. Queen Victoria Street, London, E.C. 4. [Consultant; Research.]
- Dowdall, Captain John Patrick Mitchell, A.R.C.S., D.I.C., B.Sc. (Lond.).
  11. Princeton Mansion, Red Lion Square, London, W.C. 1. [8.; M.; Research.]
- Druce, John Gerald Frederick, B.Sc. (Lond.), Borough Polytechnic Institute, London, S.E. 1. [M.]

- Dyer, Joseph William Ward, B.Sc. (Lond.), 22, Grange Road, Gravesend. [M.]
- Ellingham, Harold Johann Thomas, A.R.C.S., B.Sc. (Lond.), 34, Lausanne Road, Hornsey, London, N. 8. [S.]
- Ellis, Bernard Albert, B.A. (Cantab.), 4, Mount Adon Park, Dulwich, London, S.E. 22. [S.; M.]
- Emerson, Frederick William, A.M.C.T., 178, Heaton Moor Road, Heaton Moor, near Stockport. [Works Chemist; Research.]
- Evans, Edgar, B.Sc. (Lond.), 5, St. John's Road, Plumstead Common, London, S.E. 18. [M.]
- Figg. Eric Francis, I. Constitution Hill, Swansea. [King's College, London; S.; M.]
- Fleming, Robert, A.R.C.S.L. c/o.J. White, Esq., Shankill, Dublin. [Lecturer in Chemistry, Sultania Higher Training College, Egypt.]
- Gale, William John, B.Sc. (Lond.), 50, Stanton Road, Wimbledon, London, S.W. 19. [S.]
- Garner, John Henry, B.Sc. (Lond.), Sewage Disposal Works, Deighton, Huddersfield, [Research.]
- Gatehouse, Frank Brooks, "Maristowe," Butts Green Road, Hornchurch, Romford, [Merchant Venturers' Tech, Coll.; M.; Research.]
- Gibbs, Lieut, George Reginald, B.Sc., M.A. (Manc.), Oakleigh, Bath Road, Stonebridge, [S.]
- Gibson, Captain Stanton, B.Sc. (Lond.), 3, Oakfield Road, Strond Green, London, N. 4. [S.]
- Gilbert, Captain Lionel Felix, B.Sc. (Lend.), Frogmore, Beaconsfield, Bucks.
  [8.]
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  [Research.]
- Gill. Amos. B.Sc. (Manc.). 14. Wilson's Terrace, Broughton Moor, near Maryport, Cumberland. [M.]
- Girvan, Captain Arthur Frank, B.Sc. (Loud.), 126, Thornlaw Road, West Norwood, London, S.E. 27. [S.]
- Glasstone, Samuel, B.Sc. (Lond.), 65, St. George Street, London, E. I. [M.
- Glover, Arthur, M.Sc. (Manc.), 37, Grasmere Road, Clerksfield, Oldham, Lancs. [M.; Research.]
- Grant, Donald, M.A. (Edin.), 114, Findhorn Place, Edinburgh. [M.]
- Gray, Harold Heath, B.Sc. (Manc.), Birdwell, near Barnsley, Yorkshire, [M.)
- Gregory, Arnold William. B.Sc. (Lond.), 59. Crooms Hill, Greenwich, London. S.E. 10. [Consultant; Research; Inventions.]
- Griffiths, Evan Dalton, B.Sc. (Wales), 9, Wanstead Park Avenue, Manor Park, London, E. 12. [Research.]
- Grisenthwaite, Arthur Turner, B.Sc. (Lond.), A.C.G.I., 9, Clairview Reseat. Streatham, London, S.W. 16. [M.]

- Groves, Miss Ruby Caroline, M.Sc. (Birm.), 39, Earlsbury Gardens, Handsworth, Birmingham. [M.]
- Haddon, Cuthbert Leslie, B.Sc. (Dun.), Silverhill, Denton Burn. Newcastleon-Tyne. [8.]
- Hall, Archibald Alexander, M.Sc. (Vict.), Ph.D. (Jena), Agricultural Department, Armstrong College, Newcastle-on-Tyne. [S.]
- Hall, Edward Herman, B.Sc. (Lond.), 190, Greenvale Road, Eltham, London, S.E. 9. [S.]
- Hall, Captain Norman, Ravensdale, Walmersley Road, Bury, Lancs. [8.] Hamilton, John Campbell, A.M.S.T., 22, Brunel Street, Burnley. [Works
  - Chemist; Research.]
- Hardman, Benjamin, 29, Graham Road, Wealdstone. [Royal Tech. Inst., Salford; M.; Research.]
- Hardwick, Walter Arthur Nelson, A.R.C.S. (Lond.), 26, West Kensington Mansions, West Kensington, London, W. 14. [M.; Research.]
- Harper, Harry, A.R.C.S., B.Sc. (Lond.), 7. Selborne Grove, Keighley, Yorks, [Head of Chemistry Dept., Trade and Grammar School, Keighley.]
- Harris, John Edmund Guy, B.Sc. (Lond.), 20, Eltisley Avenue. Newnham, Cambridge. [S.; Research.]
- Haselhurst, Major Herbert William Reay, B.Sc. (Dun.), 35, Cyril Mansions, London, S.W. 11. [S.]
- Hickman, Kenneth Claude Devereux, A.R.C.S. (Lond.), Southover, Wendover Road, Bromley, Kent. [M.]
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- Hind. Stanley Reginald, B.Sc. A.R.C.S. (Lond., 19. Eardley Crescent, Earls Court, London, S.W. 5. [S.; M.]
- Holdcroft, Arthur Douglas, Wavertree, Bradwell Lane, Porthill, Stoke-on-Trent. [Sutherland Institute, Longton, Stoke-on-Trent: Ceramic Chemist; Research.]
- Holmes, Edgar William, 4, Mossey Street, St. George's Road, Hull. [Bradford Tech. Coll. Dip.; M.]
- Hornby, Arthur John Ward, B.Sc. (Birm.), No. 5 G.H.Q. Chemistry School, B.E.F., France. [S.]
- Horner, Thomas, M.Sc., Tech. (Manc.), 9, Elm Bank, Humphrey Street, Crumpsall, Manchester. [Departmental Manager, Messrs, Levinstein, Ltd.; Research.]
- Hudson, Frank, B.Sc. (Vict.), 49, Gordon Road, Monton Green, Manchester [M.]
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- Humphreys, Thomas Clement, 76, Gibbins Road, Selly Oak, Birmingham. [Birmingham Mun. Tech. School; M.; Research.]
- Hunwicke, Roderick Francis, B.Sc. (Lond.), Hurst Cottage, Hadley Common. Barnet, Herts. [8.]

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- Jackson, Colin Gyrth, M.Sc. (Leeds), 13, Wemyss Road, Blackheath. London, S.E. 3. [M.]
- Jarrard, Captain William John, B.Sc., A.R.C.S. (Lond.), The University. Sheffield. [S.]
- Jeffers, Ernest Haynes, 87, Kyrle Road, West Side, Clapham Common. London, S.W. 11. [East London Tech. Coll.; Royal Coll. of Science. Lond.; S.W. Polytechnic; over twenty-four years' experience; Research.]
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  [Aston Manor and Birmingham Municipal Tech. Schools; M.]
- Jones, George Bishop, A.M.I.C.E., 2, Reinwood Road, Lindley, Huddersfield.
  [Mun. Tech. School, Birmingham; School of Science and Art, Chester;
  Manc. Univ.; M.; Research.]
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  Birmingham. [S.]
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- Kennedy, Miss Elizabeth Gentle, B.Sc. (Glas.), 11, Carlyle Square, Chelsea. London, S.W. 3. [M.; Research.]
- Knapp, Lionel Frederick, B.Sc. (Lond.), Hertcombe, Kingston Hill, Surrey. [S.; M.; Research.]
- Laneaster, Miss Jane, A.R.C.S. (Lond.), 1, Amalinda Villas, Burlington Lane, Chiswick, London, W. 4. [Works Research Chemist.]
- Lapworth, Morvan, A.R.C.S., B.Sc. (Lond.), 44, Wilton Crescent, Wimbledon, London, S.W. 19. [S.; M.]
- Lawson, Wilfrid, B.Sc. (Liv.), 15, Barrington Road, Sefton Park, Liverpool.
  [M.]
- Leaper, Clement J., Nuns' Island, Galway. [Royal College of Science, Ireland; Chemist, Galway Chemical Works; Research.]
- Leicester, Thomas Billington, B.Sc. (Manc.), Woodland Avenue, Wolstanton, Stone-on-Trent. [M.]
- Levy, Frank, 13, Fairfield Road, Toller Lane, Bradford. [Bradford Tech. Coll.; S.; M.]
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  [M.]
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Long. Henry Lawrence, B.Sc. (Lond.), 19, Seward Road, Hanwell. London, W. 7. [M.]

Lowe, Captain Harold Newton, B.Sc. (Birm.). Barrister-at-Law. South-bourne, Sheffield. [S.]

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Marsh, William Alfred, B.Sc. (Leeds), Cedar House, Hasland, Chesterfield, [S.; M.]

Mason, Miss Helen, B.Sc. (Edin.), Elmbank, Stow, Midlothian. [Teaching.]
McClelland, Ernest Wilson, B.Sc. (N.U.I.), 79, Kansas Avenue, Antrim Road,
Belfast. [M.]

McQuillen, Captain William Thomson, B.Sc. (Dun.), Irene Villa. 211, Chesterfield Road, Sheffield. [S.]

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Mellon, Douglas, A.R.C.S.I., Elm Lawn, Serpentine Avenue, Dublin. [Fertilisers and Feeding Stuffs.]

Mersan, Ferdinand de. Fairfield, Chestnut Avenue, Boston Spa. Yorks. [Finsbury Tech. Coll. Dip.; M.]

Mitchell, Captain Alec Duncan, B.Sc. (Lond.). 52. Montalt Road, Woodford Green, Essex. [S.; Research.]

Morgan, Idwal, B.Sc. (Wales), 14, Myddleton Street. Carlisle. [M.]

Morrison, Lieut. Norman, B.Sc. (Lond.), San Remo. Wavertree, Liverpool.
[S.]

Morton, Mathew. B.Sc. (Glas.), 134, Corkerhill. Cardonald, Glasgow. [M.]. Murdoch, Barclay Brown, M.A., B.Sc. (Edin.), 5, Carlton Street, Edinburgh. [S.; Research.]

Nash, Albert, Holly House, Wath-on-Dearne. [Univ. Coll., Sheffield; fifteen years' experience; Chief Chemist, Colliery.]

Nash, Lieut. William Adrian Thomas, A.R.C.S. (Lond.), 1. St. Barnabas Villas, Guildford Road, London, S.W. 8. [S.]

Newell, Edwin Frank, A.R.S.M. (Lond.), Messrs. The Quasi-Arc Company, The Works. Copperfield Road, London, E. 3. [S.; M.]

Newlands, George, M.A., B.Sc. (Aberd.), 88, Sycamore Road, Smethwick, Staffordshire. [M.]

Nicholls, Noel Albert. B.Sc. (Birm.), The Osborne. Irvine, Ayrshire. [M.; Research.]

Norris, Mrs. Dorothy, M.Sc. (Manc.), Central Research Institute. Kasauli, Punjab, India. [Bio-Chemist; Research.]

- O'Brien, Thomas Edwin Hughes, B.Sc. (Liv.), 66, Fern Grove, Liverpool. [S.]
- O'Sullivan, Daniel Joseph, B.Sc. (N.U.I.), 5, Knockrea Terrace, Blackrock Road, Cork. [Asst. to Public Analyst.]
- O'Sullivan, Jasper Bartlett, B.Sc. (Lond.), Winterton, Finchley Road, Golders Green, London, N.W. 4. [Govt. Lab.]
- Oxley, Horace Finningley, B.A. (Cantab.), 28, Perrymead, Prestwich, Manchester. [M.: Research.]
- Palmer, Herbert Charles, B.A. (Cantab.), Emmanuel College, Cambridge. [Research.]
- Parker, Captain Horace Victor, B.A. (Cantab.), M.C., 5, Queen's Gardens, Benton, Newcastle-on-Tyne. [S.; I.I.; Research.]
- Parsons, Arthur Edwin, B.Sc. (Lond.), "Oakhurst," New Wanstead, London, E. 11. [M.]
- Paul, David McLaren, B.Sc. (St. Andrews), 69, Russell Road, Whalley Range, Manchester. [M.; Research.]
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- Plumbridge, Douglas Victor, A.R.C.S., Ph.D. (Munich), Holmewood, South Kilworth, near Rugby. [Works Chemist; Research; Inventions.]
- Ravald, Leonard Allan, B.Sc., Tech. (Manc.), "Fern Bank," Burnage Lane, Withington, Manchester. [S.]
- Rial, Lieut. Walter Percy, A.R.C.S., B.Sc. (Lond.), 33, Ventnor Street, Newland Avenue, Hull. [S.]
- Richardson, Donald Henry, B.Sc. (Lond.), Fernlea, Mapperley Plains, Nottingham. [Research.]
- Rigby, Joe, M.Sc. (Manc.). 9. Harpenden Road, Wanstead. London, E. 12, [Teaching.]
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- Robinson, Captain Percy Harry, M.C., B.Sc. (Lond.), 51, Melrose Avenue, Wimbledon Park, London, S.W. 19. [S.]
- Robson, Lieut, William Pawson, Ph.D. (Halle), M.A. (Cape). 26. Brunswick Square, London, W.C. 1. [S.; M.]
- Rosenblum, Alec Armstrong, B.Sc. (Melbourne), H.M. Factory, Avonmouth.
  [M.]
- Scott, Edward Henry, B.Sc. (Dun.), 21, Dalver Avenue, Davyhulme, Urmston, near Manchester. [M.]
- Scouller, Walter Daly, M.Sc. (Leeds), Glanteiti, Stocks Lane, Chester. [M.] Scrase, Frederick John, B.Sc., War (Lond.), 234, Battersea Park Road, London, S.W. 11. [S.; A.I.D.]
- Shankie, Richard Sangster, B.Sc. (Glas.), 52, Airlie Gardens. Hyndland, Glasgow. [M.; Research.]

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Shroff, Hasmukhlal Bhagvandas, B.Sc., Tech. (Manc.), A.M.S.T., Kala-Bharan Technical Institute, Baroda, India. [Prof. of Chemical Technology.]

Slann, Alfred Ernest Llewellyn, 31, Ranelagh Gardens, Stamford Brook, London, W. 6. (Finsbury Tech. Coll.; M.)

Smith, Captain Alton Ewart Clarence, B.A. (Cantab.), New Forest Hotel. Lyndhurst Road R.S.O., Hants. [S.; Research.]

Smith, Edgar Francis, Hampden Club, Hampden Street, London, N.W. 1. [Regent St. Poly.; M.]

Speakman, Gruffyd Thomas, B.Sc. (Wales), 6, Newton Road, Faversham. Kent. [M.: Research.]

Stanworth, James, B.Sc. (Manc.), 76. Loweshaye Road, Nelson, Lancs. [M.]

Stephenson, James, B.Sc. (Lond.), "Oaklands West," Eltham Road, Lee. London, S.E. [Govt. Lab.]

Stocks, Frederick Arnold, B.Sc. (Manc.), Sonning, Leicester Road, Hale, Cheshire. [S.; M.]

Stokes, Joseph Arthur, B.Sc. (Lond.), Field Cottage. Bradley, near Huddersfield. [Research.]

Straw, Keith Blundell, H.M. Factory, Queensferry. [School of Mines and Univ., Melbourne; M.]

Summer, Major Andrew Theodore, M.C., B.Sc. (Lond.), 4, Fulham Park Road, London, S.W. 6. [S.]

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Thomas, Lieut. Fred, B.Sc. (Wales). Grove House, Kirk Lane, Yeadon, near Leeds. [S.]

Tilley, Cecil Edgar, B.Sc. (Adelaide), H.M. Factory, Queensferry, Chester. [M.]

Tompkin, Albert, 104, Lenton Boulevard, Nottingham. [Univ. Coll., Notts. : Research.]

Toppin, Richmond Douglas, c/o Messrs. Burroughs. Wellcome & Co., Victoria Street, Waterloo, New South Wales, Australia. [Sydney Tech. Coll.; S.; Works Chemist.]

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Venn, Hubert John Partridge, B.Sc. (Lond. . "Twytord," Hargate Drive, Hale, Cheshire. [M.]

Walden, Alfred Edward, B.Sc. (Lond.), 71, High Street, Slough, Bucks. [S.; Research.]

Walker, Lieut. Charles, M.Sc. (Vict.). Waterloo House, Leamington Spa, Warwickshire. [S.]

- Walker, John Henry, A.R.T.C., Gourepore Works, Naihati, E.B. Ry., Bengal, India. [S.; I.I.]
- Watson, Miss Amy Rose, B.Sc. (Lond.), 27, Union Road, Clapham, London, S.W. 4. [M.; Research.]
- Weaving, Archibald Arthur, B.Sc. (Birm.), 53, Mayfield Road, Moseley, Birmingham. [M.]
- Weiss, Augustus Frederick, B.Sc. (Lond.), Sandown Villa, Benhill Road, Sutton, Surrey. [I.I.; Govt. Lab.]
- Wheeler, Walter Charles Gordon, B.Sc. (Q.U.I.), 35, The Common, Woolwich, London, S.E. 18. [M.]
- Whitaker, Herbert, M.Sc. (Leeds), A.M.C.T., 30, Avon Road, Hale, Cheshire. [Research.]
- Williams, Edward Thomas, M.Sc. (Liv.), 116, Well Lane, Higher Tranmere, Birkenhead, Cheshire. [S.; M.]
- Williams, Harry, B.Sc. (Manc.), 78, The Rand, Eastriggs, Dumfriesshire. [S.; M.]
- Williams, William, B.Sc. (Lond.), Shaftesbury House, Leominster. [M.]
- Wilson, Ernest Percival, M.Sc. (Leeds), Coney Moor, Methley, near Leeds.
  [S.; M.]
- Wood, Frederick Charles. B.Sc. (Lond.). 576. Stretford Road, Old Trafford, Manchester. [S.; M.; Research.]
- Woods, Captain Greatrex Johnson. 68a. Alexandra Road, St. John's Wood, London. N.W. 8. [Auckland College, New Zealand; S.; M.; Chief Analyst and Works Chemist.]
- Yajnik, Narbhishanker Amarji, M.A. (Bombay), Horman Christian College, Lahore, India. [Prof. of Chemistry.]
- Yarrow, Lieut. George Ernest, B.Sc. (Dun.), Holyrood House, First Avenue, Heaton, Newcastle-on-Tyne. [S.]
- Yeats, Captain Howard, B.Sc. (Lond.), 3, Clock House Road, Beckenham, Kent. [S.]

#### Associate Re-elected.

Bullock, Edmund Rayner, B.Sc., A.R.C.S. (Lond.), c,o Messrs. The Eastman Kodak Co., Kodak Park Works, Rochester, N.Y., U.S.A.

#### Students.

- Backes, Joseph John Valentin," Braemar," Harold Wood, Essex.
- Baguley, Noel Gregory, 23, The Park, Newark-on-Trent.
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- Beardsley, Arnold Reginald, 4. Oxford Street, Long Eaton, nr. Nottingham. Bilham, Philip Leo, 22, Old Devenshire Road, Balham, London, S.W. 12.
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Davis, Miss Mary, B.Sc. (Birm.), 23-24, Western Parade, Southsea, Hants.

Dean, John Norman, The Birches, Durham Road, Bromley, Kent.

Ellis, Percival Francis, 72, Mackintosh Place, Cardiff.

Farrer, William Lynch Hurbow, "Fern Leigh." Wakefield Road, Tanshelf. Pontefract, Yorks.

Fitter, Raymond John, 23. Woodwarde Road, East Dulwich, London, S.E. 22.

Grant. William Thomas. 3. Wells Street, Grays Inn Road. King's Cross. London, W.C. 1.

Griffiths, William Thomas, 178, Cathays Terrace, Cardiff.

Hayhurst, Horace, 57. Preston Old Road, Wilton, Blackburn.

Hindes, Frederic William, 1, Barlow Street, Oldham.

Holden, William Thomas, 22, Earnsdale Road, Darwen.

Huddart, Reginald, 30, Blessington Road, Lee, London, S.E. 13.

Hutton, John Stevenson, 44, Seafield Road, Dundee, Scotland.

Inglis, Alexander Stewart Robertson, 15, Waverley Park, Edinburgh.

Jenkins, Samuel Harry, 138, Bury New Road, Broughton, Manchester.

Jones, Norman Ellathorne, 169, Wanstead Park Road, Ilford, Essex.

Kenyon, Frank, 20, Wellfield Road, Blackburn.

Legg, Vernon Howes, 95, Carter Knowle Road, Millhouses, Sheffield.

Leitch, James Muil, I, Ormonae Mount, Muirend, Glasgow.

Mason, Denis Clifford, The Firs, Bromsgrove, Worcestershire.

Mathias, Owen, 31, Clarendon Road, Whalley Range, Manchester.

Mellenfield, Alan Keith, Elmstead, 140, Burnt Ash Hill, Lee, London, S.E. 12.

Milford. Harry. 30, Teviotdale Place, Glenogle Road. Edinburgh.

Morris, Fred, 73, Calvert Road, Bolton, Lancs.

Munro, Reginald James, Bankier Villa, Banknock, Bonnybridge, Scotland.

Naylor, Henry, 32, Accrington Road, Blackburn, Lancashire.

Newby, Edward John, 6, Shaw Road, Berkeley Avenue, Reading.

Ollard, Eric Alexander, Salcombe, South Devon.

Patterson, William Stewart, 85, Abbey Road, Barrow-in-Furness.

Perren, Edward Arthur, 70, Denton Road, Hornsey, London, N. 8.

Phillips, Henry, 72, Ferntower Road, Canonbury, London, N. 5.

Pulsford, Arthur Donald, 32, Loring Road, Isleworth, Middlesex.

Quastel, Juda Hirsch, 73, Ecclesall Road, Sheffield.

Reece, William Henry, 113, St. Benedict's Road, Small Heath, Birmingham.

Rossiter, George Friend. 11. Bank Street, Teignmouth, South Devon.

Shimwell, John Lister, 70, Station Road, Harborne, Birmingham.

Singer, Nathan, 147, Upper Clapton Road, London, E. 5.

Smith, John, 31, Dempster Street, Greenock, Scotland.

Taylor, James Gemmell, Calderbank, Baillieston, Glasgow.

Turner, Percival Elisha, Bath Cottage, Bath Road, Beenham, nr. Reading.

Vaughan, Reginald Edward, The Dell House, Wooburn, Maidenhead.

Vince, Alfred Sydney, 30, Ravensbourne Road, Catford, London, S.E. 6.

Warner, Bertrand Thomas, 438, Camden Road, Holloway, London, N. 7.

Young, Edward Bernard, 130, Trinity Street, Gainsborough.

#### DEATHS.

#### Fellows.

Percy Watson Copeland, B.Sc. (Lond.).

Henry Owen Huskisson.

Sir Boverton Redwood, Bart., Hon. D.Sc. (Ohio), past Vice-President.

#### Associate.

Frederick William Dyson Marshall, M.A. (Cantab.), M.Sc. (Manc.).

#### Student.

Stephen Hepworth Dennett, Lieut., R.A.F., B.Sc. (accidentally killed on service).

Douglas Rayment Keller, B.Sc.

2nd Lieut. Ferribee Sadler (reported missing since April 21st, 1919).

## General Notices.

**Examinations.**—An examination in Biological Chemistry, Bacteriology, etc., will commence on Monday, October 20th, 1919.

The list of candidates for this examination will close on Tuesday, September 9th, 1919.

Further information can be obtained from the Registrar.

The Chemical Technology Examination Board will be prepared to hold an examination in October next. The exact date will be announced later.

The list of candidates will close on Tuesday, September 9th, 1919.

Further information can be obtained from the Registrar.

Notice to Associates.—Associates elected prior to August, 1916, who can produce evidence satisfactory to the Council that they have been continuously engaged in the study and practical application of chemistry for at least three years since their election to the Associateship, can obtain forms of application for election to the Fellowship.

Appointments Register.—A Register of Fellows and Associates of the Institute of Chemistry who are available for appointments is kept at the Offices of the Institute. For full information, inquiries should be addressed to the Registrar.

Fellows and Associates are invited to communicate with the Registrar in any instance in which they are able to assist in securing appointments for qualified chemists.

The Library.—The Library is open for the use of Fellows, Associates and Registered Students, between the hours of 10 A.M. and 6 P.M. on week-days (Saturdays: 10 A.M. to 2 P.M.), except when examinations are being held.

History of the Institute, 1877-1914.—A few copies of the Special Edition of the History of the Institute, printed on hand-made paper and bound in cloth are obtainable at 15s. each net.

THE

# INSTITUTE OF CHEMISTRY

## GREAT BRITAIN AND IRELAND.

FOUNDED, 1877.
INCORPORATED BY ROYAL CHARTER, 1885.

## PROCEEDINGS.

1919.

#### PART IV.

PROCEEDINGS OF THE COUNCIL (JUNE -NOVEMBER, 1919).
EXAMINATIONS FOR THE ASSOCIATESHIP, JULY, 1919.
LOCAL SECTIONS. APPOINTMENTS REGISTER.
EX-SERVICE CHEMISTS. PROFESSIONAL INSTITUTIONS.
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH.
OBITUARY. THE REGISTER.

NOTICES: EXAMINATIONS; NOTICE TO ASSOCIATES; APPOINT-MENTS REGISTER; LIBRARY.

Issued under the supervision of the Proceedings Committee.

RICHARD B. PILCHER.

Registrar and Secretary.

30, Russell Square, London, W.C. 1.
November, 1919.

## Proceedings Committee, 1919-20.

OSCAR L. BRADY :Chairman).

SIR HERBERT JACKSON (President).

WILLIAM BACON,

CECIL H. CRIBB,

ALEXANDER C. CUMMING,

J. T. DUNN,

H. G. LACELL,

J. H. LESTER,

ANDREW MORE,

G. H. PERRY, M.B.E.,

HARRY SILVESTER,

GEORGE STUBBS, O.B.E.

## Proceedings of the Council.

JUNE-NOVEMBER, 1919.

Ministry of Health.—When the constitution of the Council on Medical and Allied Services was announced towards the close of September, information was received that Sir William Tilden had been appointed, on the nomination of the Council of the Institute, to represent the science of chemistry. At the same time, the Council note with satisfaction the inclusion of the names of two other Fellows of the Institute: Dr. F. Gowland Hopkins, Official Analyst to the Home Office, and Dr. T. Eustace Hill, O.B.E.

Chemists in War.—The Proceedings Committee have received several very gratifying offers of assistance in connection with the proposed preparation of an account of the services rendered by chemists during the war. The Committee hope soon to proceed with the work and will be glad to hear from other Fellows and Associates who are willing to help them.

Patents and Designs Bill.—The Council have expressed their concurrence with the Report of the Patent Laws Committee of the Conjoint Board of Scientific Societies in advocating the following improvements in the British Patent Law:—

- (I) The extension of the present period of provisional protection.
- (2) The extension of the period of protection from tourteen years to seventeen years as in the United States.
- (3) A reduction in the scale of fees. The present fee for the first four years should remain, and all renewal fees should be substantially reduced.

(4) The adoption of the "File Wrapper" system as employed in the United States.

The recommendations have been forwarded to the Board of Trade.

The Patent Laws Committee of the Conjoint Board consisted of Sir Robert Hadfield, Sir Dugald Clerk, Mr. Horatio Ballantyne, who has represented the Institute in the Conferences of Scientific and Technical Institutions concerned with this matter, and Dr. W. W. Watts, Secretary of the Conjoint Board.

Glass Research.—By arrangement with the Department of Scientific and Industrial Research, the researches proposed to be undertaken by the Vitreous Compounds Committee will be transferred to the British Scientific Instruments Research Association, of which Sir Herbert Jackson is the Director. The Department has expressed its appreciation of the initiatory work of the Institute in this matter.

Chemical Glassware, Fine Chemicals and Special Reagents.—The Council have received a letter from the Department of Scientific and Industrial Research asking for an expression of their views with regard to present supplies and quality of British-made chemical glassware and of fine chemicals for research purposes. The Glass Research Committee of the Institute is inquiring into the first matter and invites the views of Fellows and Associates thereon. The Council understand that the question with regard to fine chemicals is under the consideration of the Federal Council for Pure and Applied Chemistry.

The Joint Committee of the Institute of Chemistry and the Society of Public Analysts, under whose direction a List of Reagents for Analytical Purposes was published in 1915, have under consideration the desirability of revising and extending the List referred to, provided a sufficient number of manufacturers are prepared to produce "A. R." chemicals according to the standards specified. It is probable that the Committee will proceed with the revision of the List, and they

will be glad to receive suggestions from the Fellows and Associates in that matter.

Government Laboratory — Temporary Chemical Assistants.—The Lords Commissioners of H.M. Treasury, on the suggestion of Sir James Dobbie, have requested the President of the Institute to serve on a Committee which is to deal with the selection of Temporary Chemical Assistants in the Government Laboratory, the other members being the Government Chemist and a representative of the Civil Service Commissioners.

The Economic Interests of Chemists.—Acting on a suggestion received from the London and South-Eastern Counties Section of the Institute, the Council issued a circular with Proceedings, Part III., in order to collect information with regard to the salaries received by chemists in various branches of work.

No authoritative figures had previously been available to gauge the general rate of remuneration, the available data being insufficient as a basis for possible propaganda. In order to supply this deficiency, the Council decided to ask Members in receipt of salaries for whole-time appointments, apart from those occupying independent positions, to fill up and return a form, indicating age, branch of work, nature of position, locality, term of appointment, salary, war bonus or other allowance, prospects, leave and conditions of appointment.

Returns have been received from about 950 Fellows and Associates, and the statistics prepared therefrom have been submitted to the General Purposes Committee. The Committee are of opinion that the figures obtained up to the present probably indicate a lower average than that of the actual rate of pay received, because the less satisfactory returns are apparently more strongly represented in the replies, while a large proportion of the more fortunate members seem to have neglected to supply information.

The Council request, therefore, that Members who have not yet sent in the forms will do so as soon as possible and thereby assist the General Purposes Committee in their investigation in the interests of the profession.

Chemists and the Whitley Industrial Councils.— The brief statement on pp. 6 and 7 of Proceedings, Part III., referring to the interview between representatives of the Institute and Mr. G. J. Wardle, on behalf of the Minister of Labour, was inserted when the Part was about to go to press, and may now be supplemented by the following information:—

Deputation to the Minister of Labour.—The interview was arranged for a preliminary conference on the means to be adopted whereby the Institute might be of service to the Ministry and the Industrial Councils in connection with technical questions arising under the Whitley Report, and at the same time act in an advisory capacity on matters affecting the interests of chemists. The gist of the representation is covered by the memorandum prepared for the use of the representatives:—

"Industry looks increasingly to science for help in solving its difficulties. Besides the employer and the working man, the technical staff—including chemists and engineers—should be represented on industrial organisations, since it is to that stail that every industry turns for the means to speed up production and to make good the losses incurred by increasing costs and decreasing hours of work. In many industries the influence of science is hardly recognised; on the other hand, in some industries the demands made on science are often unreasonable. The fact remains that scientific control and the introduction of scientific methods have become essential to profitable working.

"Both capital and labour, however, must realise that the technical staff—the men of science—also find it necessary to organise for their mutual protection, in order to maintain their position. They cannot become competent to carry on their work without sound general education, broad technical training, and, in most cases, specialised experience. The nature of their work demands a certain degree of social com-

fort. It is clear, for instance, that a chemist engaged on research cannot be expected to produce good results if he is unduly harassed by economic conditions; and yet, speaking generally, such men have received less consideration from the economic point of view, than the manual workers, although their connection with industry is so essential that scarcely any productive industry can succeed without them. The necessity for them is acknowledged in the Whitley Report, which, however, makes no provision for giving them any place in the deliberations of the Industrial Councils.

"The Government is recognising the value of research, and is establishing Research Associations in connection with the various industries, under the Department of Scientific and Industrial Research; but this alone will not be sufficient to maintain the industrial position of the country. Industrial concerns individually must be encouraged to employ more chemists, physicists, and the like, on whose work their future very largely depends: reliable chemists for the examination of raw materials, intermediate products and finished products, chemists for the control of water supplies, fuel, etc., chemists for research and for investigating technical problems generally, chemists to control plant, and chemists and engineers to design plant and machinery, in addition to consultants to be called in as occasion requires.

"While technical men require representation as much as any other class, however, the Trades Unions are inclined, in some cases, to distrust such men as being allied to the employers, and for that reason do not at present wish to see them associated with the unions. In some industries the workman is said to suspect expert technical men, who introduce new processes and inventions, as being inimical to Labour, and means should be found for bringing about a change of view and promoting co-operation for the general good.

"It was on these points—(1) the representation of science in the interest both of industry and of the technical men themselves and (2) the need for bringing home to Labour the far-reaching effects of applied science—that the interview was

arranged.

"The Institute seeks representation of the profession of chemistry on Committees of the Industrial Council and on the National Industrial Council, and will confer with the Ministry of Labour and assist in every way in reconciling the trades unions to the necessity for giving full recognition to the importance of science in industry.

"The representation of chemists on the Industrial Council of any industry is rendered somewhat difficult owing to the small number of chemists engaged. In only one or two industries can they be counted by hundreds: iron and steel, dyes and, lately, explosives. The varying standards of competence and the varied nature of their work make it impossible to fix any flat rate of pay; for this and other reasons the possibility of a general strike is remote. An attempt might be made to fix minimum rates, but for the present, defence organisation is limited practically to chemists declining appointments with concerns in which the pay is inadequate or the conditions insupportable. Some method of dealing with the matter must be found, in order that chemists in common with other employees may have their interests safeguarded. Otherwise, the profession which is of such vital importance is liable to become degraded and unattractive.

"Seeing, however, that the Institute represents the trained and competent chemists of the country—both employers and employed—it does not seek recognition as a Trades Union; but it is prepared to act in an advisory capacity in any matter affecting the welfare of chemists, and is willing to assist the Ministry in technical matters proposed to be dealt with under the Whitley Report. The Institute, moreover, would cooperate with the Ministry in any scheme which may be devised for popularising science, having in view the distrust referred to above. How this may be arrived at—whether by establishing Working Men's Colleges, by lectures, by propaganda in the Press or other publication, or the like means—also remains to be determined. Much has been done in the past and can

yet be done by fostering good feeling between chemists on the technical staffs of industrial concerns and those who are working under their direction. In this, the Institute and chemists individually can take part."

The views of the Deputation were sympathetically received by Mr. Wardle, who promised to discuss them with the Minister of Labour.

Subsequently, the Registrar of the Institute attended at the Ministry of Labour, Montagu House, for a further conference with members of the Departmental Staff.

The discussion centred on the steps to be taken to secure representation of chemists on the Industrial Councils. As the numbers of chemists employed in various industries are not sufficiently great to ensure representation solely on that ground. it is more likely to be attained by bringing the industries concerned to realise the importance of chemical science; that is to say, chemists should be represented not for their numbers, but for their worth. There are signs in certain trades that objections to the representation of men in the management, technical staff, etc., will be waived. It is possible that chemists may secure representation in such industries either as representing the management or as chemists. The Industrial Councils, moreover, have the power to co-opt persons with technical knowledge and experience, and when chemical problems arise opportunities will occur for chemists to suggest that their profession should be represented on the Industrial Councils concerned.

It appears necessary that propaganda should be promoted with the object of encouraging the further employment of scientific methods and, therefore, of scientific men in industry, and it is suggested, for instance, that, in the Institute's scheme of lectures on technological subjects, employers and men connected with the industries concerned should be invited; that the chemists should ensure that their work receives greater attention in the technical press of various industries, and that scientific development should be brought before the notice of Industrial Councils, so that both

employers and men may realise the bearing of science on industry.

Revision of Bye-Laws.—The General Purposes Committee have received suggestions from the Committees of the various Local Sections and from some of the Honorary Corresponding Secretaries of the Institute with regard to the revision of the Bye-laws, which they have now under very careful consideration. They regret that it will not be possible to submit the Bye-laws to a General Meeting of the Institute in time to allow for their coming into operation before the election of the new Council. The arrangements for the election of the Council at the Annual General Meeting on March 1st 1920, will, therefore, be proceeded with under the existing Bye-laws.

Chemists in War.—The Joint Committee of the Institute of Chemistry and the Institute of Metals, which has under consideration the position of chemists and metallurgists in the Services and in the Reserve, and the action to be taken towards securing for them due recognition and adequate status, has received information from various sources with regard to the position of Officers (chemists and metallurgists) attached to the Navy, R.A.O.C., R.E. (Special Brigade and I.W.T.), R.A.M.C., and the R.A.F. They are of opinion that there is ground for complaint that the status of chemists and metallurgists is inadequately recognised in official quarters and that this is mainly due to the lack of appreciation of the technical nature of the work of such officers and of the scope and character of the education and training required for the practice of chemistry and metallurgy. The Committee apprehend that, notwithstanding all the scientific service rendered during the war, there is a danger that the vital importance of such service to the State will be overlooked, unless the Government Departments concerned can be brought to realise the rights and claims of science and of scientific men. The

Committee are investigating the matter and will report in due course.

British Engineering Standards Association.—In response to an invitation from the British Engineering Standards Association to nominate a representative to serve on the Aircraft Sub-Committee on Chemicals of the Association, the Council have asked Mr. F. W. Harbord, C.B.E., to act in that capacity. As, however, the reference to the Sub-Committee includes matters relating to organic materials, Mr. Harbord has asked that a second representative be nominated, and this suggestion has been forwarded to the Association.

The Regulations.—The Nominations and Examinations Committee, jointly with the General Purposes Committee, the Board of Examiners and the Chemical Technology Examinations Board, have now under consideration the general revision of the Regulations, especially with regard to the scope and character of examinations for the Associateship and Fellowship.

Institutions.—The following institutions have been added to the list of those formally recognised by the Council for the training of Candidates for the Examinations of the Institute:—London: The Sir John Cass Technical Institute; Southampton: University College.

Examinations.—At the examinations for the Associateship held in July seven candidates presented themselves. The following were successful:—In Mineral Chemistry: Lieut. Cecil William Wood. In Organic Chemistry: Lewis Guy Peirson, B.A. (Cantab.), and John Edwin Pollock, B.Sc. (Lond.). In Chemical Technology, with Textile Chemistry as special subject: Percy Edwin Stanhope. The examination papers are given on pp. 14—20.

Academic Robes.—An anonymous correspondent writes to the Institute periodically from Sheffield, suggesting the adoption of academic robes by Members of the Institute. This suggestion was under consideration in 1911, when the

opinion of the Members was invited, with the result that less than 10 per cent. showed any interest in it and less than 7 per cent. were in favour of it.

Anonymous Letters.—In addition to the above the Institute has received other anonymous letters from time to time on other subjects of professional interest. The reason for anonymity is not apparent, but some of the matters referred to in the letters cannot be dealt with unless the writers will disclose their identity.

Personal.—Professor Arthur W. Crossley, C.M.G., F.R.S., has been appointed Director of Research by the British Cotton Industry Research Association.

Mr. F. G. Edmed, O.B.E., of the Directorate of Chemical Inspection, Royal Arsenal, Woolwich, has been appointed Superintending Chemist, Admiralty Inspection Department, Holton Heath.

Lieut.-Colonel S. J. M. Auld, D.S.O. M.C., D.Sc., Ph.D., has been awarded the American Distinguished Service Medal.

Professor Alexander Findlay, D.Sc., has left Aberystwyth and has been appointed to the Chair of Chemistry at the University of Aberdeen.

Mr. F. W. Dootson, M.A., has been appointed University Lecturer in Chemistry at Cambridge.

Professor G. G. Henderson, LL.D., F.R.S., has proceeded to the Regius Chair of Chemistry at the University of Glasgow.

Captain J. W. McBain, M.A., Ph.D., has been appointed to the new Chair of Physical Chemistry at the University of Bristol.

Professor Gilbert T. Morgan, D.Sc., F.R.S., has been appointed Professor of Chemistry at the University of Birmingham on the retirement of Professor Percy F. Frankland.

Dr. Samuel Smiles, O.B.E., F.R.S., has been appointed to the new Chair of Organic Chemistry at Armstrong College, Newcastle-on-Tyne. The following appointments have been made in connection with the Department of Chemistry at the Royal Technical College, Glasgow:—Professor Thomas Gray, D.Sc., Ph.D., to be Professor of Technical Chemistry; Captain F. J. Wilson, D.Sc., Ph.D., to be Professor of Inorganic and Analytical Chemistry; Lieut.-Colonel I. M. Heilbron, D.S.O., Ph.D., to be Professor of Organic Chemistry.

Professor Percy F. Frankland. F.R.S., has been awarded the Davy Medal of the Royal Society for his distinguished work in chemistry, especially that on optical activity and on

fermentation.

Dr. R. H. Pickard, F.R.S., has been appointed Principal of

the Battersea Polytechnic.

Dr. R. D. Abell has been appointed Head of the Department of Chemistry, and Dr. L. L. Lloyd has been appointed Head of the Department of Dyeing, in the Bradford Technical College.

# Examination for the Associateship.

Branch (a). Mineral Chemistry. July 7th to 11th, 1919.

MONDAY, JULY 7th: 10 a.m. to 1 p.m.

- 1. Describe the preparation of the peroxides of sodium, lead, manganese and cerium. Compare their reactions, and discuss the constitution of metallic peroxides.
  - 2. Give methods for the estimation of minute quantities of :-
  - (a) Hydrogen chloride and carbon dioxide in chlorine.
  - (b) Oxides of nitrogen in flue gas.
  - (c) Carbon monoxide in air.
- 3. Give an account of the allotropic forms of silica. Discuss the bearing of these on the behaviour of refractory silica bricks in use.
- 4. Give an account of the methods in commercial use for the preparation of sodium carbonate and sodium hydroxide from common salt. Discuss the methods of conversion of the chlorine of the salt into a saleable product, and the relative values of the bye-products from the economic standpoint.
  - 5. Write a short essay on one of the following:-
  - (a) The application of X-rays to the study of crystal structure.
  - (b) The double fluorides and their applications.
  - (c) The compounds of metals with nitrogen.

TUESDAY, JULY 8th: 10 a.m. to 4.30 p.m.

Make a complete analysis of the aluminium alloy.

 $(This\ exercise\ may\ be\ completed\ to-morrow.)$ 

WEDNESDAY, JULY 9th: 10 a.m. to 4.30 p.m.

Complete the analysis of the aluminium alloy.

Make an analysis of the coal gas supplied to your bench.

 $THURSDAY,\,JULY\,\,10th:\,\,10\,\,a.m.\,\,to\,\,4.30\,\,p.m.$ 

Prepare a specimen of vanadyl chloride from the impure vanadium pentoxide supplied.

(This exercise may be completed to-morrow.)

Determine the nature and amounts of the impurities in the same sample of  $vanadium\ pentoxide$ .

FRIDAY, JULY 11th: 10 a.m. to 4.30 p.m.

Complete the analysis of the vanadium pentoxide.

Prepare some pure ammonium vanadate and from this a specimen of pure vanadium pentoxide,

### Branch d).—Organic Chemistry. July 7th to 11th, 1919.

#### MONDAY, JULY 7th: 10 a.m. to 1 p.m.

(Five questions only to be attempted.)

- 1. Illustrate the manner in which the more important sulphonic acids of (a) the naphthylamines; (b) the naphthols; and (c) the amidonaphthols can be utilised in the formation of azo-colouring matters.
- 2. Indicate the relationship between Laudanosine and Papaverine and describe the methods which have been used for the synthesis of these alkaloids.
- 3. Discuss, by referring to the preparation and properties of the hexahydrophthalic acids, the stereoisomerism which is associated with the occurrence of asymmetry in fully reduced carbon ring compounds. Give your reasons for supposing that some of these acids would be capable and some incapable of being resolved into optical enantiomorphs.
- 4. Write a short essay on the phenomenon of colour as exhibited by organic compounds.
- 5. d-Fructose, although strongly laevo-rotatory, is so called on account of its relationship with d-Glucose. Explain this relationship and show how the configurations of the two sugars have been determined.
- 6. Indicate the relationship between stearic and oleic acids and describe the manner in which the structures of these substances have been determined. Give a short account of the method by which the change from oleic acid to stearic acid has been accomplished industrially.

## TUESDAY, JULY 8th: 10 a.m. to 4.30 p.m.

Substance A is the hydrated calcium salt of an organic acid and contains 14.2 per cent. of calcium. You are required to prepare a specimen of the pure acid and of its anilide and to determine the melting point of each. Determine the general structure of the acid so far as you are able to do so in the time at your disposal. (The acid contains Carbon = 35.8, Hydrogen = 4.5, Oxygen = 59.7 per cent.) (Calcium diglycollate).

## WEDNESDAY, JULY 9th: 10 a.m. to 4.30 p.m.

Analyse qualitatively the given mixture B, which does not contain more than three constituents, and estimate the amount of any one constituent (Aniline oxalate, oxanilide and Maltose).

## THURSDAY, JULY 10th: 10 a.m. to 4.30 p.m.

From the sample of toluene provided (C) prepare a pure specimen of ortho- and of para-toluidine.

## FRIDAY, JULY 11th: 10 a.m. to 4.30 p.m.

From the crude sulphonic acid chloride (D) provided prepare a specimen of the amide. Examine the behaviour of the amide when it is treated with a concentrated solution of bleaching powder and the cooled solution is cautiously acidified by acetic acid. Estimate the amount of chlorine attached to nitrogen present in the purified product formed (Toluene para-sulphonic chloride).

## Branch (r).—Chemistry of Food and Drugs, etc. July 7th to 12th, 1919.

#### MONDAY, JULY 7th: 10 a.m. to 1 p.m.

1. Give some general account of the chemical structure of Proteins and of what takes place chemically in their physiological digestion.

2. Make a diagrammatic sketch of the structure of a polarimeter and explain precisely what is meant by the "specific rotation" of a substance. Explain in detail how you would ascertain this in the case of (1) a soluble carbohydrate, and (2) of an essential oil.

3. A sample of milk gives on analysis :-

T.	J		0.0
Fat		 	 3.2
Non-fatty solids		 	 8.0
Proteids		 	 3.75
Ash		 	 -78
Milk sugar (by differe	nce)	 	 3.47

What would be your conclusion from these results?

4. Give an account of the origin and of the chemical properties of Aconitine. Discuss its action as a poison and the means available for its identification as to the cause of death.

5. Give a full account of the various methods used in the identification of blood stains.

6. State the composition and medicinal doses of Syrupus Chloral, Pulvis Ipecacuanha Compositus, Tinctura Quininae Ammoniata, Tinctura Nucis Vomicae, Tinctura Digitalis and Acidum Hydrochloricum Dilutum.

Enumerate the official preparations of Iodine and Morphine.

### MONDAY, JULY 7th: 2 p.m. to 5 p.m.

1. The white powder A was sold as Calomel. Examine and report upon it.

2. Examine microscopically and describe the suspended matter present in the sample of water B.

3. Make slides and drawings of the powder C, and indicate its probable nature.

### TUESDAY, JULY 8th: 10 a.m. to 4.30 p.m.

Determine the nitrogen in the sample A.

Identify the substances B and C (Quinine sulphate and Lactose).

Report on the genuineness of the sample of butter.

Determine the quantity of boracic preservative (stated as Boric Acid) in the sample of milk.

#### THURSDAY, JULY 10th: 10 a.m. to 4.30 p.m.

Determine the percentages of lime and of phosphoric acid in the sample of slag.

Determine the proportion of nitric nitrogen in the sample of water.

#### FRIDAY, JULY 11th: 10 a.m. to 4.30 p.m.

Determine the available chlorine in the sample of chloride of lime. Examine the sample of wine submitted to you for alkaloid, quantitatively and qualitatively (Brucine).

#### TRANSLATION.

Time allowed: 2 hours.

L'oxyde de carbone n'est pas décomposé par les feuilles; Th. de Saussure, Boussingault et nous-même, dans les expériences que nous venons de rapporter, n'avons jamais pu constater la moindre trace d'oxygène après insolation de feuilles maintenues dans l'oxyde de carbone dilué d'hydrogène; aussi avait-on admis que la décomposition de l'acide carbonique par les feuilles n'est pas complète, et qu'elle fournit seulement de l'oxyde de carbone et de l'oxygène; mais comme dans ce cas le volume d'oxygène mis en liberté ne serait que la moitié de celui que renferme l'acide carbonique, on avait été conduit à supposer que l'eau se décompose en même temps, et fournit par sa décomposition le demi-volume d'oxygène manquant pour parfaire celui qui existe dans l'acide carbonique.

Cette manière de voir est purement hypothétique; en effet, la décomposition de l'eau n'a jamais été démontrée. En outre, dans l'hypothèse précédente, on suppose que les deux résidus hydrogène et oxyde de carbone s'unissent pour former la première matière organique, point de départ de toutes les autres, matière qui, comme nous le verrons plus loin, est sans doute l'aldéhyde méthylique CH<sub>2</sub>O; or, quand on met au contact des feuilles éclairées un mélange d'oxyde de carbone et d'hydrogène, on ne voit

en aucune facon le volume du gaz diminuer.

Il semble dès lors qu'il faille représenter cette réaction fondamentale sous une autre forme; on peut supposer que l'acide carbonique forme avec l'eau un hydrate CO<sub>2</sub>H<sub>2</sub>O et que c'est cet hydrate qui se décompose avec émission d'oxygène: CO<sub>2</sub>H<sub>2</sub>O = O<sub>2</sub> + CH<sub>2</sub>O.

P. P. Deheran.

Und in der That, wenn man einen Blick in die ältere Litteratur der Terpene warf, erschien es auch nicht gerade verlockend, sich mit dem Gegenstand zu beschäftigen. Es lag eine kaum übersehbare Fülle von Einzelbeobachtungen vor. In den Handbüchern wurde eine sehr grosse Anzahl von Terpenen aufgeführt, die man je nach ihrer Herkunft mit einem besonderen Namen belegte und die man zum mindesten bezüglich ihrer physikalischen Eigenschaften für wirklich different von einander hielt. Dass einige der Forscher, welche eingehendere Untersuchungen auf diesem Arbeitsfeld ausgeführt hatten, sich correctere und bestimmtere Vorstellungen über den Zusammenhang der Terpene gebildet haben, als aus der Litteratur ersichtlich ist, mag wohl sein. Wirkliche Klarheit war aber jedenfalls in keinem Punkt erreicht. Wollte man solche in das weit verzweigte und verworrene Gebiet hineinbringen, so war Folgendes anzustreben;

Erstens: Es mussten für alle wirklich von einander verschiedenen Terpene so scharfe und bestimmte Merkmale der Eigenschaften festgestellt werden, dass eine Erkennung und Unterscheidung der chemischen Individuen

unschwer möglich wurde.

Zweitens mussten auf Grundlage einer solchen genauen Charakteristik das Verhalten und die gegenseitigen Beziehungen der einzelnen Kohlenwasserstoffe, namentlich in Rücksicht auf ihre Eigenschaft in einander übergehen zu können, ermittelt werden.

Erst nach Erfüllung dieser beiden Vorbedingungen konnte dann

Drittens eine nähere Erforschung der einzelnen Verbindungen hinsichtlich ihrer Constitution wirklichen Erfolg versprechen.

Wallach, Berichte, 1891.

Branch (g). Chemical Technology. Subject Selected: Textile Chemistry, Dyes, their properties and application, Bleaching and Works Practice.

At Bradford Technical College: July 14th to 17th, 1919.

Special Examiner: Professor Walter M. Gardner, M.Sc., F.I.C., assisted by Dr. L. L. Lloyd, F.I.C.

#### PAPERS IN GENERAL CHEMICAL TECHNOLOGY.

JULY 14th, 1919: 9.30 a.m. to 12.30 p.m.

FOUR questions ONLY are to be attempted. Where possible give equations and sketches.

- 1. How would you treat effluents from the following works to make them suitable for discharging into a river? (a) ammonia liquor works; (b) laundry; (c) paper works.
- 2. Describe some method of obtaining dry zinc oxide from a crude zinc chloride solution containing iron. Mention the types of apparatus used in practice.
- 3. Small quantities of sulphuretted hydrogen are contained in the gases leaving a chemical plant. How would you treat the gases to remove it and thus prevent atmospheric pollution?
- 4. What means would you adopt at a power station to prevent water when used for condensing purposes, corroding the brass tubes of, say, a turbo-generator, where, through the building of too short a chimney, the water during cooling by means of towers becomes acid through absorption of sulphur dioxide?
- 5. How would you manufacture solid and liquid sodium bisulphite, the source of sulphur available being spent oxide?
  - 6. Discuss the use of gaseous fuels for steam raising purposes.

### 2 p.m. to 5 p.m.

Four questions only are to be attempted. Where possible give equations and sketches.

- 1. Describe the chief catalytic processes used for the manufacture of sulphuric acid. What is your view of catalytic action?
- 2. It is proposed to erect a plant for the production of 96—98 per cent. sulphuric acid from acid of 35—40 per cent., acid of 68 per cent., and acid of 80 per cent. What type and construction of plant would you advise in each case?
- 3. Discuss types of plant used for the production of common salt from mineral brine, pointing out the difficulties that have to be overcome.
- 4. What type of fuel would you advise (a) for raising steam for an electrical generating plant working at a constant pressure of 120 lbs. per square inch, and (b) for a dye-house working at approximately 80lb. pressure?

Which of the following available fuels would be most economical for each of the two uses?

Coal analysis.	A.	B.	C.
Cal. value	 13,796	13,540	13,990
Moisture	 1.6 per cent.	4.5 per cent.	6.2 per cent.
Ash	 3.1 ,,	11.2 ,,	8.8 ,,
Cost per ton	 34/6	28/3	27/9

5. Which of the following water supplies would you select for dye-house purposes and which for steam raising for power purposes? Would either water be more suitable if treated? if so, state your method of treatment.

Analysis.		A.	B.	
Total solids	 • •	37.5	36.2	grains per gallon.
Temp. hardness	 	$6 \cdot 1$	3.8	0
Perm. hardness	 	nil.	13.4	
Alkalinity (Na <sub>2</sub> CO <sub>3</sub> )	 	11.2		
Lime factor	 	$5 \cdot 2$	$7 \cdot 2$	
Analysis of total solids.  Silica  Iron and aluminium oxides Calcium carbonate  Magnesium carbonate  Sodium carbonate  Calcium sulphate  Magnesium sulphate	• •	0·69 0·56 4·20 1·60 11·20	0·42 0·82 3·80 — 10·88 6·48	
Sodium chloride	 	$12 \cdot 12$	11.04	
" sulphate	 	6.31	$2 \cdot 15$	
Organic matter	 	0.82	0.61	

6. Discuss the modern adaptation of electricity to the deposition of dust, smoke, and liquid particles from gases.

#### TEXTILE CHEMISTRY.

JULY 15th, 1919: 9.30 a.m. to 12.30 p.m.

FOUR questions ONLY are to be attempted. Where possible give equations and sketches.

- 1. Write a short essay on the action of sodium hypochlorite solutions upon cotton, wool, and silk. Which of the reactions mentioned are utilised commercially, and what objects are attained thereby?
- 2. What different types of bleaching agents are used in the textile industries, and why and when is each employed?
- 3. What is understood by mercerisation? What different methods of mercerisation are used and how is each carried out?
- 4. How is hydrochloric acid manufactured, and what are the impurities met with that may lead to defects in (a) the production of aniline black, and in (b) the removal of silk from waste?
- 5. What kind of oil would you employ for (a) the lubrication of a main shaft of a dye-house containing 24 beeks of 300 gallons capacity; (b) the

lubrication of a loom for light weight silk goods; and (c) a loom for heavy worsted coatings? Give reasons for your selections.

6. How would you test and evaluate samples of alpha-naphthylamine and para-nitraniline for use in the production of ingrain dyes?

#### 2 p.m. to 5 p.m.

FOUR questions ONLY to be attempted. Where possible give equations and sketches.

- 1. Classify the dyestuffs that are applied to cotton, into groups of different fastnesses to the varying agencies they have to withstand, and mention the chief applications for which the different types are employed.
- 2. What do you understand by the term "mordant dyestuffs"? What methods are used for the production of chrome lakes upon wool? State the advantages and disadvantages of the different methods from a technical standpoint, including the question of cost?
  - 3. Write a short essay on the various theories of dyeing.
- 4. What derivatives of hydro-sulphurous acid are used in textile chemical work? Give a short account of their preparation, properties and uses.
- 5. What objections are there to the use of oxidisable oils and resin in the manufacture of textile soaps?
- 6. Describe the production of beta-naphthol and give its more important commercial applications. What impurities are objectionable for its application by the dyer?

#### PRACTICAL EXAMINATION.

JULY 16th-17th, 1919.

- 1. Identify the dyestuff supplied.
- To which chemical groups do the dyes present on the fabric supplied belong? Identify the individual dyestuffs if possible.
- 3. Make a qualitative and quantitative analysis of the sample of mordant.
  - 4. Identify the fibres A, B, C & D.

The candidate was examined orally in General Chemistry and in the interpretation of Drawings of Plant and Machinery, and was required to translate passages from French and German technical literature.

## Local Sections.

The Rules for Local Sections, with slight variations introduced at the suggestion of the respective Committees of the Sections—have been generally adopted, and copies are now obtainable from the Honorary Secretaries.

Birmingham. — The Birmingham Local Section was inaugurated at a meeting held in the Chamber of Commerce, New Street, Birmingham, on November 13th, 1918, when Dr. E. W. Smith was elected chairman. Since that time four general meetings have been held, at which matters concerning the professional interests of chemists have been discussed. Mr. Farrar opened a discussion on "The Recognition and Remuneration of Chemists "; Dr. E. W. Smith on the subject of "The Training of the Works Chemical Staff"; Messrs. H. Silvester and A. E. Tucker on "State and Municipal-Aided Research Laboratories and the Consulting Chemist"; and Mr. F. C. A. H. Lantsberry discussed "The Relations between the Chemist and the Engineer." On the whole, the session has been a very promising one. Fifty-three Fellows and Associates have definitely joined the Local Section, and it is hoped that there will be a considerable influx of new Members after the annual general meeting, which will be held on December 1st, 1919. The Section is working in close co-operation with the Local Section of the Society of Chemical Industry, with whom a joint Dinner and Social Evening has been arranged during the present session.—Hon. Secretary: Fred. C. A. H. Lantsberry, M.Sc., F.I.C., 63, Walford Road, Sparkbrook, Birmingham.

East of Scotland Section. — The Annual General Meeting, at which the election of members of Committee

and office bearers will take place, will be held in the Cockburn

Hotel, on Friday, December 12th, at 7.30 p.m.

The Secretary would be glad if Fellows and Associates residing in the East of Scotland area who do not receive notices of meetings would forward their names to be entered on the list of members of the district. Honorary Secretary, B. D. W. Luff, F.I.C., 85, Ashley Terrace, Edinburgh.

Gretna Section.—Meetings have been arranged for November 14th, December 12th, and January 9th, to be held at 6.15 p.m., in the Scientific Room, Staff Social Club, Eastriggs. Hon. Secretary, William Caw, F.I.C., H.M. Factory, Gretna.

Irish Section.—The Annual General Meeting will be held on Friday, November 21st, at 4.15 p.m., at the Royal College of Science, Dublin.

Honorary Secretary: Dr. A. G. G. Leonard, A.R.C.S.I., B.Sc., F.I.C.

Liverpool and North-Western Counties Section.—Meetings of the Liverpool Section are held monthly, on the second Thursday, at the North-Western Hotel, Lime Street, Liverpool, at 7.30 p.m., except during the summer vacation. Hon. Secretary, John Hanley, F.I.C., 7, University Road, Bootle, Liverpool.

London and South Eastern Counties Section.—The Committee of the Section have forwarded a more detailed report of the meeting held on June 25th, referred to in Part III. (p. 27).

The agenda included a proposition that the Council of the Institute should be asked to ascertain "the position of Members in relation to the Wages Temporary Regulation Act, 1918, or the Consolidation Act, 1896, and, if possible, to ask for arbitration under these Acts to fix the minimum salary of chemists (men or women, Members of the Institute)."

Mr. C. S. Garland, in moving the resolution, expressed his opinion that the Institute should safeguard the interests of

chemists and endeavour to secure their adequate remuneration. He proposed that a salary of £300 should be regarded as the The first few years of a chemist's career were of the utmost importance, as it was usually the period of life in which he had the greatest capacity for work and in which his chance of success was determined. A competent chemist should receive at least 4300, and employers would be willing to pay that sum for men who could not only do their work, but were capable of taking responsibility. Referring to consultants in independent practice, Mr. Garland remarked that they would pay larger salaries if they could agree among themselves not to employ unqualified assistants and would demand higher fees than those commonly charged. In teaching, the low salaries paid to junior demonstrators were excused by the College authorities on the ground that the appointments were given to senior students who were still in training. They should be adequately remunerated; and demonstrators and lecturers proportionately at a much higher rate than at present.

With regard to some official appointments, Mr. Garland contended that they were paid less than unskilled workmen.

Dr. Stanley Walpole, speaking in support of the proposition, said that if it were possible to secure a minimum salary of £300 the position of the senior members of the profession would be correspondingly improved. He was in favour of an Association being formed to secure this object.

Mr. Bernard Howard, in criticising the proposal, suggested that if it were adopted, Fellows and Associates would no longer be available for routine work. He hoped that the minimum would not tend to be the maximum; he was not sure that it would not become so; but it would tend to make a Trade Union of the Institute. He thought that there were other methods by which better conditions could be secured; but he did not see how a minimum salary could be enforced.

Mr. Garland said that if the proposal received general support it would be for the Council of the Institute to decide the action to be taken.

Mr. E. M. Hawkins said that he did not know of any other

profession having prescribed a minimum salary. There were chemists who were specially suited for routine work and were not capable beyond that; they were very necessary, but the value of such work was limited. If a minimum were fixed, there would still be the necessity of making some decision with regard to the unqualified men who were capable of doing routine work. He was not inclined to vote for the proposition.

Dr. Blackler, speaking in support, said that the prevalence of low salaries was largely due to the chemists themselves. They often failed through undertaking positions requiring industrial experience on a scale beyond their capacity.

Mr. R. Leslie Collett and Mr. G. S. Heaven, having spoken against the proposition, Miss Chatt expressed the hope that women would endeavour to stand out for the same minimum salary as men.

Mr. J. H. Powell indicated that not a few qualified men were prepared at the present time to take less than £300 in order to get back to normal professional work; but he was in sympathy with the proposition as moved by Mr. Garland, hoping that manufacturers would not regard that sum as a maximum.

Dr. Fyleman also spoke in support. He thought chemists were being better remunerated than they had been in the past; they were now better organised and an endeavour should be made to secure the minimum suggested for Members of the Institute.

Dr. Oscar Brady opposed the proposition on the ground that as the Institute was not a Trade Union, a minimum rate of pay could not be enforced. The Members must secure proper remuneration for themselves and, as far as possible, refuse less than the suggested minimum. He agreed that an organisation should be formed on Trade Union lines which should be supported by chemists and should support them until they obtained work. The Institute had no right to enforce a minimum salary and had no power to remove a Member who accepted less.

Finally, on the motion of Prof. Brame, and with the concurrence of Mr. Garland, the meeting decided to invite an expression of opinion from other Local Sections on the question.

Dr. Brady's resolution suggesting that the Council should be asked to obtain a return of salaries for whole-time appointments was then adopted. (See an 7.6)

ments was then adopted. (See pp. 5-6.)

The first Annual Meeting of the Section will be held at the Institute on Wednesday, November 26th. Hon. Sec.:—William Bacon, B.Sc., F.I.C., 27, Walbrook, London, E.C. 4.

Manchester Section.—Mr. David Cardwell, Hon. Sec. of the Manchester Section, has notified change of address to 14, Blair Road, Alexandra Park, Manchester, S.W.

Newcastle Section.—A meeting will be held on Friday. November 21st, at 7.30 p.m., in the rooms of the Chemical Industry Club, Drawing Room Café, Brunswick Place, off Northumberland Street. Hon. Sec., pro tem., Dr. J. T. Dunn, F.I.C., Public Analyst's Laboratory, 10, Dean Street, Newcastle.

# Appointments Register.

The work in connection with the Appointments Register has been very heavy since the Armistice, while considerable numbers of chemists have been demobilised from the forces and released from Government work. However, a steady flow of notifications of vacancies for various branches of work has been received, so that notwithstanding the constant addition of newcomers to the list the general position has on the whole improved. The number of names now on the Register is less than three-fifths the highest record in any one week during the period indicated and was at one time less than one-half. The number of members in receipt of notices, however, does not represent the number unemployed, as it includes many who are seeking to change their positions.

It is frequently found that those who obtain appointments, through the aid of the Register or otherwise, neglect to have their names withdrawn. This incurs unnecessary work and expense. Another difficulty arises from the fact that companies and firms requiring the services of chemists are in most cases looking for applications from those who have already had experience in a particular industry, often highly specialised. If no such candidate happens to be available it is often difficult to convince the prospective employers that a well-trained chemist without specialised knowledge will soon be able to adapt himself to their needs. Such specialists are usually already in employment, and sometimes it happens that one who has been disposed to change his position will, on notifying his present employers, be offered inducements to remain with them. These negotiations, while of benefit to chemists already in appointments, obstruct the progress of those who are not so satisfactorily placed. Nevertheless, it

would not be right to maintain the Register solely for those who are disengaged; because under the present arrangement it affords a most useful agency for advancing chemists whose positions offer poor prospects or are otherwise subject to unsatisfactory conditions, while the vacancies they leave afford "stepping-off" ground for others who are seeking experience.

Under the present system of notifying vacancies, all Members on the Appointments Register are afforded an equal chance of candidature; but it has been suggested that the Institute should select and recommend candidates, having regard to their respective circumstances. The Council feel, however, that this responsibility should not be put upon the executive officers who are given wide discretion to assist all candidates in the best interest of the profession generally and without favour.

The use of the Register is available to members and also, for the present, to chemists other than members who have been on active service, who receive particulars not only of appointments notified exclusively to the Institute, but of many abstracted from other duly acknowledged sources, numbering, in all, on the average about forty weekly, and varying widely in scope and circumstances.

Appointments for unqualified chemists are also occasionally notified to students who have looked to the Institute for assistance, and are often offered on partly reciprocal terms, under which young assistants without means may receive a nominal salary and gain experience in return for their services, with opportunities for supplementing their training by attendance at classes. Frequent applications are received, too, from senior students who desire to work in private laboratories during the greater part of the summer vacation, and the Registrar will be glad to hear from Fellows who are able to help them to gain experience in this way, since it affords them an insight into practice and an introduction which may prove valuable when they have qualified and are ready to proceed to their first appointments. There is general agreement, how-

ever, that, except for the opportunities of experience during vacations, students are well advised to complete their college training before attempting any specialisation, and that in any case in which articles of pupilage are entered into, provision should be made for attendance at systematic courses in chemistry, physics and allied sciences in a recognised institution with a view to obtaining a definite qualification. Such students are advised to keep in touch with the office of the Institute during their training.

Evidence in the possession of the Institute points to the fact that in the past many companies and firms have paid too little attention to the importance of securing well-trained chemists, and as a result have suffered severely at the hands of their far-seeing competitors. Improvement in the position of British industry and of the status of chemists themselves will follow in proportion as directors realise the necessity of attracting, to their laboratories and works, chemists of the highest competence who will ensure the employment of properly trained assistants and have due regard, in turn, to the prospects of such assistants.

## Ex-Service Chemists.

The Minister of Labour has addressed a special appeal to the professions on behalf of men whose careers have been interrupted by service with the forces and who wish to become qualified under the Government Training Grant Scheme.

In many professions—the law, architecture, surveying, accountancy, various branches of engineering—the training includes experience in an office or on works, and it is customary, in such instances, for the principals to receive premiums from their pupils. Under the above scheme, however, professional men are asked to share with the State the responsibility of helping ex-service men to become resettled in civilian life, and to take them as pupils without requiring the payment of any premium. Fortunately, several thousand openings of this kind have been provided; but more are required.

While the scheme assists the individual, the aim is to replace the loss of professional men of the highest type.

So far as chemistry is concerned, therefore, the Ministry holds that officers and men who desire to follow this profession should have attained a standard of education suitable to secure their admission to a definite University Course for a recognised degree or diploma; and such officers and men have been recommended, to apply for grants under the Board of Education Scheme for Service Students. This decision accords with the views expressed to the Ministry by the Institute, and reported in Proceedings, Part II., 1919 (pp. 41—44). A few exceptions have been made under which the Ministry of Labour has provided grants for chemists, but in such cases the training firms have made provision for the candidates to take systematic training in chemistry and allied scientific subjects at recognised institutions. The training

firm is expected to provide a salary according to the attainments of the candidate, and the grants made are, therefore, on a lower basis than under the Board of Education Scheme.

Nearly 800 members and students of the Institute, or rather more than 25 per cent. of the total, have been on active service. This is to be regarded as a remarkable record in view of the necessity of retaining trained chemists for munitions The fatal casualties, however, compared with those among men of other professions, have been less heavy, largely due, no doubt, to the transference of considerable numbers from the field to munitions factories during the later years of the war. On the other hand, the normal output of chemists from the universities and colleges has been practically stopped for four years. In spite of these facts, the supply of trained and competent men is at present considerably in excess of the demand, while the chemical departments of the universities and colleges are so full that the accommodation is insufficient for the It is obvious, therefore, that, unless the industries of the country become alive to the importance of employing chemists in greater numbers, there will be a prospect of serious overcrowding of the profession three or four years hence.

In these circumstances every effort should be directed to assisting the trained and qualified chemists now available to secure appointments and to encourage in every way possible their absorption into industry. The Appointments Register of the Institute is available to all who have served with the forces; many have already secured appointments by this means, and no trouble will be spared to help others to regain their position in professional life. All members of the Institute and employers of chemists are invited to co-operate in this department of the Institute's work, for it is far more desirable at the present time to resettle qualified men than to make vacancies in private laboratories and works for those who have not completed their college training and will not readily be able to do so unless they obtain the State aid which may be afforded them under the Board of Education Scheme.

## Professional Institutions.

The question is occasionally asked, what is the use of the chartered professional organisations? A member of the Institute will occasionally ask what return he gets for his support. He is usually conscious of some pride in his membership, and has a vague idea that he is doing the right thing in promoting the common good of his calling; but sometimes he looks for a tangible return without regard to the larger view of his position as a citizen. It may be well, therefore, to review the matter broadly.

Few people realise the extent of the influence for good exercised by the chartered professional bodies generally; few even of the members themselves of such institutions have considered the effect of their keeping alive the corporate spirit of their profession, as much for the good of their country as for themselves collectively and individually. Every new student and every new member is a potential factor in promoting the efficiency of his profession and of his country, whether his interest lies in law, medicine, art, engineering, architecture, accountancy, surveying, science, music, journalism, or any other of the higher intellectual callings which are commonly called professional. During the past century. Royal Charters have been granted by the Crown to about twenty-five organisations whose aim is to promote efficiency in professional and technical service. Under the provisions of their respective charters, these organisations have been controlled by councils, representative of the various branches of each profession, who have formulated systematic schemes of training for professional life, have prescribed examinations, and have awarded diplomas which in the course of time have come to be recognised and accepted by the public as evidence of competency to practise. Their aim is to provide competent service; their duty is to maintain the supply of such service; and their reputation depends on the adequate fulfilment of this duty. They have been built up by years of unselfish devotion on the part of successive councils, who have regarded it both an honour and a privilege to be elected to the control of affairs in their "ofession; they have not shirked it, even though it has often involved considerable sacrifice.

Such organisations have not only raised the status of the professions concerned, but have contributed to the advancement of knowledge, discovery and invention, to improvements of methods in industry and commerce, and to the general welfare and comfort of the community. They have in many cases given the lead to the universities and colleges in showing the need for higher technical training, and may thus claim to have stimulated the utilitarian, together with the purely academic, side of education; moreover their influence in that direction has reacted on our educational system, by stimulating the activities of the technical colleges, some of which have, in the course of time, become universities.

The educational influence of professional institutions among their members is further extended by meetings for the reading of papers, discussion and interchange of opinion, as well as by their publications and the provision of libraries.

Another aspect of the activity of professional bodies is in the furtherance of legislation, since the weight of opinion which they are able to bring to bear on public matters, pressing for reform, makes for better administration and constitutional stability. At the same time, as departments of Government become aware of the existence of such bodies, they turn increasingly to them for advice and assistance on the matters with which they are directly concerned.

As to the more direct benefit of the individual member, the mere possession of the hall-mark of professional competence gives him a status among his brethren. A young member of any profession rarely obtains a start in life except through the assistance of his elders, and scarcely any member can remain

entirely independent of the help and advice which his fellows are able and almost invariably willing to give him as occasion arises. When first qualified he has a right to recognition as a member of his profession, and a sense of esprit de corps and responsibility in upholding its prestige. He must have regard to the ethics obtaining in his profession, relying upon others to do the same, and recognising that he has duties as well as privileges in his relations to his fellows and to the public. Other benefits usually include the right of attending meetings and lectures, the use of a library, the receipt of a journal, and a voice in the direction of the affairs of his profession. He can look to his Institution for advice on many matters and, though as an individual he may not do so frequently, he will know that others have a similar advantage and that collectively the advisory work of his professional body is consider-If he is a keen member it may be his privilege to become a member of the council, or even attain the distinction of serving as an officer of his institution.

Again, the meetings of these bodies afford opportunities, not only for the elder members to give the younger the benefit of their knowledge and experience, but for those of the coming generation to bring new life into the proceedings, as they frequently do, with credit to themselves and to the advantage of others.

They are not established for purposes of gain, nor do the members thereof derive or seek any direct pecuniary advantage from their membership. They are not trade unions, and are not intended to be; but their work, their influence on public opinion, their promotion of *esprit de corps*, all tend to maintain and raise the social status of their members, and ultimately to improve the economic position of their members.

# Scientific and Industrial Research.

The Report of the Committee of the Privy Council for Scientific and Industrial Research for the year 1918—19, recently published (Cmd. 320) deals with proceedings covering the twelve months ending July 31st, 1919.

While the aim of the Department is the systematic encouragement and organisation of research in industry generally, the investigations undertaken during the first four years of its existence have, in a considerable measure, been directed to the solution of problems arising from the war, in which the Department has been able to render valuable assistance. The Committee states that a marked change is taking place in the attitude of industry towards scientific research, and that masters and men are beginning to recognise its vital importance. The scheme of co-operative Research Associations, adopted on the recommendation of the Advisory Council, has been welcomed by many industries, and its success, so far as the Government is concerned, is considered to be assured. The future of the Associations rests with the industries themselves. If they are worked with the same interest and broad outlook that the leaders have shown in bringing them into existence they will without doubt become most potent agencies in revivifying our manufactures and in showing the way to the better production on which the solvency of the nation depends.

(The Committee appears to be apprehensive of a shortage of competent scientific workers, but, so far as chemists are concerned, the demand at present is certainly not sufficient to absorb the available talent released from the services and from war work.)

The Department is undertaking investigations for various other Departments of State, and—in addition to the Industrial

Research Associations, the National Physical Laboratory and the Fuel Research Station—is taking over the administration of the Geological Survey and Museum which have hitherto been attached to the Board of Education.

Reference is made to the Fuel Research Board, the completion of its laboratories, the progress made with its Research Station, its work on Gas Standards, and the proposal that the Board shall be entrusted with the study of the problems suggested in the "Report of the Inter-Departmental Committee on Various Matters concerning the Production and Utilisation of Alcohol for Power and Traction Purposes" (Cmd. 218).

Reports have been published by the Food Investigation Board, dealing with means to be taken to reduce waste and questions relating to preservation and transport of food, and by the Tin and Tungsten Board which is concerned with the chemico-physical problems underlying the extraction of these metals from their ores.

The Report of the Advisory Council, published with that of the Committee, gives further details of the establishment of Research Associations, and the results so far achieved.

The following paragraphs from pages 25—26 are quoted in full in view of their bearing on the professional interests of chemists:—

#### Workers under Research Associations.

The conditions of employment offered by the Associations to their scientific workers, whether directly engaged or attached to a university or college, will need very careful study. The war has made the scientific man realise his vital importance to the community as a means of defence, and a certain class-consciousness has arisen among the younger men, of which account must be taken. The need of the community may be, and we believe is, no less urgent in time of peace. But it is not so insistent, because the processes of peace, owing to their relative complexity, are so much slower, and this fact also must be brought into reckoning. Yet discussion of the terms of employment offered by firms and of the status and remuneration of scientific and technical workers under Government can only do good, and the proposals or criticisms which have recently appeared will no doubt be carefully considered by the Research Associations. It has been claimed by some that research workers employed by a firm, or a Research Association, should have the right to patent and exploit for their own benefit any discoveries they may make which their employers may be unwilling to take up.

This claim has, at first sight, the appearance of justice, but on the other hand, it has been well pointed out that the work done in the research laboratories of firms and Research Associations is essentially team-work in which the contribution of each member is part of a whole, and that no arrangement which encourages individuals to play for their own hands is consistent with the well-being either of their colleagues or of their employers. The true solution is to be found in the adoption of an enlightened and generous policy by the Association or firm.

Closely connected with this matter is the attitude of Research Associations to the consultant and analyst. The position of the consultant or analyst is one of great importance to the industrial community. The work of this profession ranges from analysis or testing of a more or less routine kind to research of a high order. Many firms and even whole industries have relied entirely in the past upon the professional consultant for such

research as they have wished to undertake.

It would not be surprising if some members of a profession which has won for itself a reputation for high accuracy and skilful technique, and which includes among its leaders original workers of the highest order, should view with doubt the possible incursion of powerful trade associations into their own field of work. It is accordingly very important that Research Associations should define clearly, and from the beginning, their attitude in this important matter. We think they will agree, in the first place, not to undertake for their members any routine work of the kind hitherto undertaken by the professional analyst or testing engineer.

One Association has already agreed to make a panel of consultants and analysts in order to enable its members to obtain technical assistance. This Association acts as a gobetween in cases of this kind, and does not inform the inquiring firm which consultant has been employed, or the consultant from which firm the inquiry has come. The higher range of consulting work is obviously not susceptible of this treatment, but the Advisory Council believe there is no likelihood that original workers among consultants will find their services neglected as a consequence of the establishment of Research Associations. It will be impossible for even the most powerful and wealthy Associations to cover the whole field of investigation opened up by the needs of their industry, and the independent specialist is at least as likely to be called to their aid as the worker in college or university. Moreover, individual firms which are progressive will often need to have problems worked out for their own purposes, some of them doubtless suggested by the work of the Association to which they belong. These problems are as likely to be entrusted to the independent

consultant as to the Association itself, particularly if the independent worker has specialised in that direction.

(With regard to the above abstract, Fellows and Associates are reminded that the Research Department has been informed of the recommendations of the Council of the Institute on the organisation of the Government Chemical Service. It is to be hoped that the Department and the Research Associations will realise the necessity of ensuring that appointments for chemists under them will carry such terms and conditions that they will attract workers of the requisite competence and standing. Further, with regard to the benefit derived from discoveries or inventions, there is general agreement that their development is seldom the work of a single individual; but the originators of profitable propositions should be accorded substantial recognition. Not only should the Associations and firms adopt "an enlightened and generous policy" towards their investigators, but in addition there must be created a mutual feeling of trust in their relations which can only exist when the services of investigators are adequately rewarded.)

The Advisory Council have dealt with this question on pp. 70—71:—

The objects which it appears to us necessary to secure in dealing with grants to individuals, are two: first, the results obtained with the aid of public funds should not be exploited for the benefit of an individual firm, but should be made generally available to the industries interested upon reasonable terms; and next, an adequate share of the profits or other reward should be secured to the discoverer or inventor, who has, in the past, been too frequently exploited by the company promoter. After careful consideration we have come to the conclusion that these two objects can be sufficiently secured without requiring the submission of all results to the Department before they are published. Our aim in recommending these grants is the encouragement of research, with a view to the increase of existing knowledge. Only in exceptional cases in which results of commercial value are obtained is it desirable to limit the freedom of publication. If, as in the past, it is made a condition of grant to all research workers, whether engaged in pure or applied scientific investigations, that no results shall be published until they have been examined by the Department with a view to possible industrial applications, there is a serious danger that the point of view of the scientific investigator may be affected, and that instead of aiming primarily at the increase of existing knowledge, he will begin to consider what advantage may be obtained for himself by following up directions of inquiry which will lead to profit, instead of devoting himself to the pursuit of knowledge for its own sake. We should view any such tendency with grave apprehension, and we desire to call special attention to the importance of so associating Government with the encouragement of research as to avoid any such danger.

On our recommendation Your Lordships have now agreed that unless in our opinion the subject of investigation is one which is likely from the outset to lead to results of commercial value, it shall be open to a research worker receiving a grant from the Department to publish the results of research from time to time as he thinks best. This arrangement is made on the understanding that the research worker will not take out a patent or make other commercial use of any results which he may obtain without previous consultation with the Department. Where, however, in our opinion the subject of investigation is one which is likely from the outset to lead to results of commercial value, the grants to research workers will be subject to the conditions governing the availability of results which have previously been adopted. These conditions will also be attached to the continuance of grants for any research which unexpectedly leads to results of commercial value.

(The possibility of the Research Associations trenching on the practice of professional consultants to some extent is probably unavoidable; but by bringing the industries to realise the importance of science, such overlapping should be more than counterbalanced by the attraction of new practice to consultants as well as by the increased employment of chemists in industry. How far the creation of panels of consultants will safeguard the interests of the profession remains to be proved. The "serious shortage of competent research workers" to which reference is also made does not appear to be confirmed by the statement at the conclusion of the Report (p. 77) that the Advisory Council have received "many applications from men and women with scientific qualifications for employment under the Department," which is followed by an intimation that the placing of such workers does not fall to the headquarters staff of the Department. The authorities, however, may be assured of every assistance from the Institute in securing the services of qualified chemists for suitable vacancies.)

The Report also contains a suggestion that the Department should, under suitable conditions and within carefully defined limits, act as a bureau of information relating to research; that the Department should be officially responsible for receiving, abstracting, filing and collating formal written

communications from research workers, Boards, Institutions or Associations related to or supervised by the Department.

This information will be regarded as confidential and will not be communicated except in writing and after consultation with the research worker or organisation from which it has been received. Although the Records Bureau will not attempt to make a comprehensive collection of information relating to the results of research, it is certain that a good deal of miscellaneous information of this kind will come into the possession of the Department, and the Bureau will not exclude the collection, filing and communication of non-confidential information of evident or probable value to those working in touch with us. Information of this kind will consist of extracts from the published reports of the research organisations connected with the Department, or with the Research Councils of the Overseas Dominions and of other countries, as well as of selected extracts from papers published by scientific or technical journals, British and foreign. Any information received from other Government Departments as to the results of research conducted by or for them will similarly be communicated-if confidential in nature under the rules above described. Even with these limitations, however, it is obvious that the work of the Bureau will be a large undertaking. Research for the Department is now, or will be, carried out under the following headings :-

(a) Research Institutions, such as the National Physical Laboratory

and the Fuel Research Station.

(b) Research conducted by other Research Boards or Committees of the Department.

(c) Research Associations.

(d) Researches by scientific and professional bodies aided by the

Department.

(e) Researches by individuals aided by grants from the Department. When to the results of the work of these organisations and individuals are added the bulky compilations dealing with the researches of other Departments of State the mass of material may necessitate a considerable But the safe course will be to begin subdivision of the work of the Bureau. on a small scale, and to develop gradually in the light of the experience gained during the initial stages. It is suggested that the Bureau may also prove useful in two ancillary directions. It occasionally happens that lists of materials and apparatus which might be of use for research are received from dealers in this country and abroad. It will be unnecessary to record all these lists, but specific items in them may be of interest and importance to one or other of the organisations connected with the Department, and such information will from time to time be circulated. Further, since the waste product of one industry is often the raw material of another it is possible that a Research Association may draw attention to a bye-product of which the industry it represents finds it difficult to dispose. The Bureau will record the existence of such bye-products and notify them to other Research Associations with a view to their being tested and utilised.

The proposal suggests the necessity for a considerable staff of competent chemical advisers to deal with the great variety of enquiries likely to be received. In referring to the work of the National Physical Laboratory, the Advisory Council state that they have considered the general question of the relation of Government to the testing of ordinary commercial products. They have confirmed the decision of the Treasury Committee—(appointed after the representations of the Institute of Chemistry on this matter in 1906)—that in their opinion the routine testing of ordinary commercial products is not and ought not to be within the functions either of the National Physical Laboratory or of this Department, though the research necessary to the establishment of suitable tests for these purposes would properly rest with the Laboratory, and would carry with it the necessity of conducting preliminary tests and possibly the occasional testing of specimens of the products in question for the purpose of reviewing the tests.

The Report of the Advisory Council also includes information with regard to the work of its various Boards and Committees, and an outline of the development of Government organisations for research in other parts of the Empire and in Allied Countries.

The following is quoted from the third Part of the Report, dealing with other researches aided by the Department:—

It has been suggested that the Department would do well to give aid for research to scientific and technical societies " far more freely than at present and on a more liberal basis than in the case of trade associations. We welcome friendly criticism of our policy and have indeed learnt much from the practical suggestions and even the objections that have been put before us by those who are interested in the progress of research. At least they give us an opportunity of bringing forward facts which are not sufficiently recognised, while they have often enabled us and the Department to improve our procedure. In this case we think the facts have not been fully grasped. The Department is spending at the present moment over £16,000 a year in grants to scientific and technical societies for research which has a bearing on industry, besides the grants to individual research workers, twenty-eight of whom are engaged on work with an industrial bearing. This sum is considerably larger than the total expenditure of the Department in 1915-16. Moreover, the grants made are in many cases on a much more liberal basis than those made to Research Associations. But it will be realised at once that it would be destructive to our policy of encouraging co-operative research by the industries themselves wherever possible, if we were to entrust the duty of undertaking large schemes of industrial research to the scientific and technical societies and were to assist them more liberally than the industries for doing so The societies are often in the position to take the first steps towards convincing manufacturers that scientific investigation is needed, by undertaking researches of interest to a particular industry. In these cases we welcome their assistance and are prepared to recommend grants-in-aid at least as generous as those offered to Research Associations. In other cases the societies are in a position to conduct or supervise researches which are unsuitable for attack by a Research Association though they may be important industrially, or which affect industries at present too disorganised or too small to be able to co-operate under our Here, again, we are willing to help if suitable proposals are made But it must not be forgotten that the members of scientific and technical societies are generally very busy men who can only devote their spare hours to the work of their society, while the secretarial staff is seldom large enough to enable them easily to administer large sums of public money. These factors will, we fear, always tend to keep the research work which scientific societies can themselves undertake within moderate limits. Indeed we think it likely that as time goes on societies of this kind who are willing to co-operate with us will come more and more to leave the financial administration to the Department, and to confine themselves to making proposals for research and nominating suitable members of the Committee appointed to supervise the work. In several cases already this procedure has been adopted with success.

Following on the above is a statement with regard to grants to Students and Research Workers in which emphasis is laid on the necessity of the maintenance of a high standard by the worker.

The list of Boards and Committees of the Department (Appendix I.) contains the names of many Fellows of the Institute who are giving their services to the Department.

# Obituary.

WILLIAM BEAM was born on December 25th, 1864. From 1878 to 1884, while pupil and assistant to Dr. Henry Leffmann, he attended the courses mainly in chemistry and mining, in the University of Pennsylvania, where he graduated as M.A. From 1884 to 1888, he was chemist to the Baltimore and Ohio Railroad Co.; but in 1889, returned to Dr. Leffmann as a partner at the same time entering the Jefferson Medical College, where he took the degree of M.D. in 1892. He was joint author, with Dr. Leffmann, of "Progressive Exercises in Practical Chemistry," "Analysis of Water for Sanitary and Technical Purposes," "Analysis of Milk and Milk Products," "Select Methods of Food Analysis." Later he became Chief Chemist to the Egyptian Salt and Soda Company, and eventually Head of the Wellcome Chemical Research Laboratory, Gordon College, Khartoum. He was elected a Fellow of the Institute in 1903.

JOHN RICHARD BROOKE died at Singapore, Straits Settlements, on July 9th, 1919, in his 44th year. He was educated at Highbury Park School, and received his scientific training at the School of the Pharmaceutical Society and King's College, London. After passing the Examination for the Associateship of the Institute in 1900, he became Chemist to the Lonsdale Iron Works Co., Ltd., Whitehaven, and after about three years acquired the practice of W. E. Halse, in Mincing Lane, where he continued until 1906. In that year he was appointed Assistant Government Analyst and Opium Inspector, Singapore; in 1909, he became Deputy Government Analyst, Penang; was engaged on special duty when the Opium Farm was taken over by Government, and was Assistant Superintendent, Chanda and Liquors Revenue. At the time of his death he held an important position in the Government Monopolies Department. He was elected a Fellow of the Institute in 1903.

ADRIAN JOHN BROWN died at Northfield, Worcestershire, on July 2nd, 1919, in his 68th year. He was born at Burton-on-Trent, educated at the Grammar School there, and received his scientific training from 1867-1869 under Hofmann at the Royal School of Mines. After three years' experience as assistant to Dr. W. J. Russell, at St. Bartholomew's Hospital, he was appointed, in 1873, Chemist to Messrs. Thomas Salt & Co., Ltd. Brewers, at Burton, with whom he remained until 1899, when he was appointed the first Professor of Malting and Brewing in the University of Birmingham, which position he held at the time of his death. He was the author of numerous papers on bio-chemistry, bacteriology and fermentation, and of a book entitled, "Laboratory Studies for Brewing Students." A brief account of his work, much of which was of a pioneer character, is given in the Journal of the Institute of Brewing, July-October, 1919. He was elected a Fellow of the Royal Society in 1911, and was President of the Institute of Brewing from 1917–1919. He was elected a Fellow of the Institute in 1887, was Examiner in Biological Chemistry from 1901–1906, and served as a Member of the Council from 1906–1909.

WILLIAM JAMES COUSINS died at Cromwell House, High Holborn, on August 1st, 1919, in his 58th year. He received some early instruction in chemistry from Mr. W. T. Lawrence, at Hereford, and entered the Normal School of Science, South Kensington, in 1882, where he worked under Professors Frankland and Japp, and was subsequently Junior Assistant Demonstrator. In 1886, he became Consulting Chemist and Assayer to the British and Colonial Land Station and Financial Association, giving special attention to gold and silver extraction and agricultural chemistry. Later, he conducted a consulting practice in Chancery Lane, and was successful in developing several industrial concerns in which he was able to apply his chemical science. He was elected a Fellow of the Institute in 1888.

OWEN CHARLES EDWARDS died on 2nd November, 1918, in his 26th year. Born at Llangefui, Anglesey, educated at the local County School, and trained at the University College of North Wales, Bangor, he took the degree of B.Sc. with Honoars in Chemistry, in 1915. Shortly after he received an appointment at the Cotton Powder Company's Works, at Faversham, where he remained until April, 1918. He was elected an Associate of the Institute in May, 1918.

LIEUT. REGINALD GREAVES was educated at Craven Street Secondary School, Hull, and the Collegiate School, Liverpool. He matriculated in 1913, and at the outbreak of war was registered as a Student of the Institute at Liverpool University. He enlisted immediately in the 19th King's, being transferred to the Special Brigade, R.E. (Gas Services), in June, 1915, and receiving a commission in the R.G.A. (S.R.) in March, 1917. After having served throughout the war, he died in France from influenza, in January, 1919, in his 24th year.

LIEUT. HAROLD CECIL GREENWOOD, O.B.E., died on November 4th, 1919, in his thirty-third year. He graduated as B.Sc. in Manchester University in 1907, being placed first in the first-class honours list, and was awarded the Mercer Scholarship. In the following year he obtained the M.Sc. by research, and was elected to a Beyer Fellowship and later an 1851 Exhibition Scholarship. He continued on research with Haber at Karlsruhe (1909-10), and then at the National Physical Laboratory (1910-11), and received the degree of D.Sc. (Manc.) in 1912. His work, mainly in physical chemistry, was published in the Transactions of the Chemical Society, the Proceedings of the Royal Society, the Transactions of the Faraday Society and the Zeitschrift für Physikalische Chemie. In 1911 he was appointed research chemist to Messrs. William Hutton & Sons, Sheffield, with whom he remained until 1915, when he was gazetted Lieutenant, R.N.V.R., and was engaged on the erection and operation of a poison-gas plant under the Admiralty. In May, 1916, he was transferred to the Ministry of Munitions, Inventions Department, for the control of work relating to the development of the synthetic production of ammonia. He was elected a Fellow of the Institute in 1918.

HENRY OWEN HUSKISSON, an Original Fellow of the Institute, died at Pinner on June 22nd, 1919, at the age of 91 years. He was trained at the School of the Pharmaceutical Society, where he was a prizeman in 1844–1845. He was head of a firm of wholesale manufacturing chemists at Islington, in which his son, Dr. Paul L. Huskisson, F.I.C., who died in 1908, was also a partner.

GLYN JONES was born at Swansea, on February 11th, 1894, and was educated at the Gowerton County and Intermediate School. In 1913 he commenced his training at University College, Aberystwyth, from which he took the degree of B.Sc. (Wales) with Honours in Chemistry. In the early part of the war he helped to prepare acetaldehyde and subsequently acetal in connection with the scheme for securing supplies of beta-eucaine for the Government, and then became a Works Chemist with Messrs. Chance & Hunt, at Oldbury. In 1915 he was refused enlistment, but in 1918 was accepted for an infantry regiment, and was killed in action early in October of that year.

EDWIN LAPPER died in Dublin, on July 29th, 1919. He was born and educated in London, and was Assistant to Professor R. V. Tuson, at the Royal Veterinary College, for some years before he went to Dublin in 1870 to the School of the Royal College of Surgeons, in Ireland, which he left in 1877 to become Lecturer in Chemistry, at the Ledwich School of Medicine. On this school being amalgamated with the Royal College he became Professor of Chemistry, and later of Physics, to the College, which positions he held until his retirement, owing to ill-health, in 1915. He was elected a Fellow of the Institute in 1888, and qualified as L.R.C.S.L., in 1889, and F.R.C.P.L., in 1890.

FRANCIS EDWARD LOTT, J.P., an Original Fellow of the Institute, died at Burton-on-Trent, on September 18th. 1919, in his 65th year. Educated at Trent College, he was trained at the Royal College of Chemistry and Royal School of Mines from 1872 to 1876, obtaining the diploma of A.R.S.M. in the last year, having in the meantime accompanied the Eclipse Expedition to Siam, in 1875. About this time he was editor of the Royal School of Mines Majazine. In 1877, he was appointed Chemist and Brewer to Messrs, Thomas Robinson & Co., Burton-on-Trent, and in 1884 established a consulting practice jointly with Mr. C. G. Matthews. F.I.C., in the same town. He was the author of several papers contributed to the Institute of Brewing and the Society of Chemical Industry, most of which were written jointly with Mr. Matthews, with whom he was also joint author of "The Microscope in the Brewery and the Malthouse."

LIEUT. LAWTON KEIR RODGER was born at Rutherglen, in 1892, educated at Glasgow Academy, and took the Diploma Course at the Royal Technical College, being admitted an Associate of the College in 1913. He then became chemist to Messrs. Smith & Rodger, Paint and Varnish Manufacturers, at Glasgow, with whom he was engaged in August, 1914, when he joined the Royal Engineers (T.F.). He received a commission in February, 1915, was promoted Lieutenant in June, 1916, discharged with honorary rank on account of disabilities contracted on service, and died on January 15th, 1919. He was elected an Associate of the Institute in 1918.

GEORGE WILLIAM ALVEY TEANBY died at East Dereham. Norfolk, on April 22nd, 1919, in his 51st year. He was trained at Yorkshire College (now the University). Leeds, and was assistant to Professor Smithells in 1889 until shortly before passing the Examination for the Associateship of the Institute. In the same year, he was appointed chemist to the West Yorkshire Iron & Coal Co., at Ardsley, near Leeds, where he remained until 1892, when he became assistant to Mr. Frank Faulkner, of Bath Row, Birmingham. In 1899 he moved to East Dereham, where he

held an appointment with Messrs, F. and G. Smith, Maltsters. He was elected a Fellow of the Institute in 1893.

2ND LIEUT, JOSHUA BIRAM CROSSLEY WIGFIELD, a Registered Student of the Institute, was killed in action, in France, on September 20th, 1918. Born at Lincoln, and educated at Sedgebrook Grammar School, he matriculated at London University, and entered University College, Nottingham. At the time of his death he was serving with the Royal Engineers.

#### CORRIGENDUM.

SIR BOVERTON REDWOOD, BART.—An Associate has directed attention to the circumstance that in an obituary notice published in Part III. the statement was made incorrectly that Sir Boverton Redwood was born at Boverton in Glamorganshire. He derived his name from that place, where his father, Professor Theophilus Redwood, had a small estate; but he was born at 19. Montague Street, Russell Square, within a few hundred yards of the Institute.

# The Register.

At the meetings of the Council held on July 25th and October 10th, 1919, 28 new Fellows were elected; 9 Associates were elected to the Fellowship; 167 Associates were elected; and 28 new Students were admitted. The names of Members and Students elected on October 31st and November 28th will be published in Part I., 1920.

The Institute has lost 7 Fellows, 3 Associates, and 2 Students by death.

#### New Fellows.

S = Naval, Military, or Air Service. M = Munitions.

I.I. = Passed the Intermediate Examination of the Institute.

Anfilogoff, Nicholas Alexander, Lathol House, Thames Haven, Essex. [Chief Chemist and General Works Manager, London and Thames Haven Oil Wharves, Ltd.]

Appleyard, James Robert, Royal Technical Institute, Salford. [Head of Applied Chemistry Dept., Royal Technical Institute, Salford.]

Baird, Will, 16, Kinnoull Mansions, Rowhill Road, Clapton, London, E. 5. [Chief Chemist, Messrs. Lewis Berger & Sons.]

Benson, Richard Walters, Sunny Hill, Silcoates, near Wakefield. [Chief Chemist, Messrs. George Cradock & Co.]

Bliss, Major Henry James Wheeler, B.A. (Oxon.), M.A. (Columbia), Bond Place Chambers, Leeds. [S. Director of Research, British Research, Association for the Woollen and Worsted Industries.]

Bowis, William John, Ph.D. (Zurich), The Gables, Bridgford Road, West Bridgford, Notts. [Technical Director, Messrs. Boots, Ltd.; Research.]

Dawson, William Haywood, Riverston, Wrottesley Road, Woolwich London, S.E. 18. [Manager and Head Chemist, British Alizarine Co., Ltd.]

Edwards, William Buckland, B.Sc. (Lond.), 1, Vanbrugh Park Road. Blackheath, London, S.E. 3. [Central Tech. Coll., London; Twenty years' experience; Directorate of Chemical Inspection, Royal Arsenal. Woolwich.]

Freeth, Francis Arthur, O.B.E., M.Sc. (Liv.), Heysmere, Sandiway, Cheshire. [S.; Chief Chemist, Messrs. Brunner, Mond & Co.]

- Guthrie, William Alexander, c o Government Analytical Laboratory, Cairo, Egypt. [Petroleum Research Chemist, Egyptian Govt.]
- Hannay, James Ramsay, Know Mill House, Entwistle, near Bolton. [Works Manager, Know Mill Printing Co.]
- Hirst, Henry Reginald, B.Sc. (Leeds), Collingham Bridge, near Leeds. [Director, Messrs. G. H. Hirst & Co., Ltd. Passed Exam. for A.I.C. (1895); S.]
- Holden, George Edward, M.Sc. Tech. (Manc.), 23, Durnford Street, Middleton, near Manchester. [Head Chemist, Velvet and Cord Dyers' Association.]
- Lee, John William, Birchill Lodge, Hasland, Chesterfield. [Manager and Chief Chemist, Hasland Coking Co.]
- Moodie, William Ewing, Avenue Cottage, Alexandria, Scotland. [Chief Chemist, Messrs. John Orr, Ewing & Co.]
- O'Brien, Frederick, M.Sc. (Vict.), 4, Queen Square, Bristol. [Nineteen years' experience; Consulting Chemist.]
- O'Neill, Charles, 17, King's Drive, Heaton Chapel, near Stockport. [Chief Chemist, Bleachers' Association, Ltd.]
- Ormandy, William Reginald, D.Sc. (Tübingen), St. Loo Mansions, Chelsea, London, S.W. 3. [Consulting Chemist: Research.]
- Phillips, Henry Ablett, Royal Gunpowder Factory, Waltham Abbey, Essex.
  [Head of Lab. and Assistant Manager; wenty-three years' experience;
  Research.]
- Pitt, Arthur Ernest, B.Sc. (Lond.), Sewardstone, 46, Spratt Hall Road, Wanstead, London, E. 11. [Twenty years' experience; Research Chemist, Messrs. W. J. Bush & Co., Ltd.]
- Pyman, Frank Lee, D.Sc. (Vict.), Ph.D. (Basel), College of Technology, Manchester. [Professor of Technological Chemistry, Manchester College of Technology.]
- Robertson, Joseph Gold, Ph.D. (Jena), 19, Broomhill Terrace, Partick, Glasgow. [Chemist and Works Manager, Messrs. John Broadfoot & Sons; Research.]
- Sanders, James McConnell, Holly House, Welling, Kent. [Head of Special Research Lab., Anglo-Mexican Petroleum Co., Ltd.]
- Shenton, James Porter, 37, Torbay Road, Chorlton-cum-Hardy, Manchester. [Consulting Chemist; Thirty-two years' experience.]
- Thompson, Stanley, The Portland, St. John's Road, Buxton, Derbyshire.

  [Twenty years' experience in Colour Chemistry.]
- Wheeler, Richard Vernon, D.Sc. (Vict.), The Bungalow, Eskmeals, Cumberland. [Director, Home Office Experimental Station.]
- Willey, George Brydon, A.R.S.M., 62, Glebe Road, Crookes, Sheffield. [Chief Asst. Chemist, Messrs. Hadfields, Ltd.]
- Williams, Herbert James, 5, Richmond Road, Uplands, Swansea. [Chief Chemist, Messrs. Vivian & Sons.]

## Associates Elected to Fellowship.

- \* Anderson, Edward, c o Mrs. Campbell, 7, Hermand Terrace, Slateford Road, Edinburgh.
- Browning, Capt. Ronald George, B.Sc. (Lond.), Belswains, New Dover Road. Canterbury.
- Bunker, Lt. Col. Sidney Waterfield, D.S.O., M.C., B.Sc. (Lond.), 17, King Edward's Grove, Teddington, Middlesex.
- Cheng, Albert Pinzen, B.Sc. (Birm.), West Gate, Kiating-hsien, Kiangsu, China.
- Cox, Henry Edward, B.Sc. (Lond.), 44, Bassaley Road, Newport, Mon.
- Emsley, Sydney, B.Sc. (Vict.), Deane House, Prince's Avenue, Northwich, Cheshire.
- Garland, Charles Samuel, B.Sc., A.R.C.S. (Lond.), 57, Garratt Lane, Wandsworth, London, S.W. 18.
- Macintyre, Lieut. Ernest Gunn, B.Sc. (Glas.), 221, Langside Road, Glasgow.
  \*Roos, Capt. Charles Bernard, B.Sc. (Lond.), 26, Heathdene Road, Streatham, London, S.W. 16.
- Thurston, Frank Stanley, B.Sc. (Lond.), The Government Laboratory, Clement's Inn Passage, London, W.C. 2.
- White, Major John Christison, M.C., A.K.C., 49, St. James' Road, Upper Tooting, London, S.W. 17.
- \* Note.—Mr. Edward Anderson and Capt. C. B. Roos were elected to the Fellowship at a Meeting of the Council held on March 28th, 1919. Their election should have been notified in Proceedings, Part III.

## New Associates (by examination).

Peirson, Lewis Guy, B.A. (Cantab.), Bothwicks, Newquay, Cornwall.
Pollock, John Edwin, B.Sc. (Lond.), 40, Sun Street, Waltham Abbey, Essex.
Stanhope, Percy Edward, 16, Bertram Road, Manningham, Bradford.
Wood, Lieut. Cecil William, 11, Macaulay Road, Clapham Common, London, S.W. 4.

## New Associates.

- Adams, Thomas Henry, 7, Douglas Street, Derby. [Univ. Coll. Nottingham; Twenty-seven years' experience.]
- Aitchison, Captain Leslie, B.Sc. (Lond.), D.Met. (Sheff.), New Eldon Chambers, Cherry Street, Birmingham. [S.]
- Alston, Richard Archibald, A.M.C.T., 4, Colley Street, Old Trafford, Manchester. [Nine years' experience; Research.]
- Andrews, Albert Edward, Dover Lodge, 41, Wood Vale, Forest Hill, London, S.E. 23. [Finsbury Tech. Coll. Dip.; Twenty-three years' experience]

- Auger, William, B.Sc. (Lond.), A.R.C.S., 10, Chester Road, South Tottenham, London, N. 15. [S.]
- Austin, Samuel Sydney, B.Sc. Tech. (Vict.), A.M.C.T., 42, Delaunays Road, Crumpsall, Manchester. [Works Chemist; Dyes.]
- Baker, Arthur, Knockhall House, Greenhithe, Kent. [Manchester Coll. of Technology; Bury Tech. Coll.; Blackburn Tech. Coll.; Twenty years' experience.]
- Baker, Gerrard Wollaston, 3, Haling Park Road, South Croydon, Surrey.
  [Finsbury Tech. Coll. Certif.; S.]
- Bell, James Horst Brunneman, M.A. (Edin.), B.Sc. (Edin.), South Manse, Auchtermuchty, Fife. [M.]
- Bell, Herbert Dearman, Sewage Disposal Works, Milcote, Stratford-on-Avon. [Coll. of Technology, Manchester; S.; Research.]
- Berends, Johann Friedrich, B.Sc. (Lond.), "Glenville," Chesterfield Road, Ashford, Middlesex. [S.]
- Berry, Arthur George Vale, c/o Trinidad Leaseholds, Ltd., 76, Marine Square, Port of Spain, Trinidad, B.W.I. [West Ham Tech. Inst. and East Ham Tech. Coll.; Seventeen years' experience; M.]
- Booth, Thomas, M.Sc. (Vict.), 154, Bradford Street, Bolton, Lancs. [S.]
- Bradshaw, John, M.Sc. (Vict.), Vernon House, Monument Park, Wigan. [S.; M.]
- Braid, Major Kenneth William, B.Sc. (Aberd.), B.Sc. (Agric.), Ellerslie, Cults, Aberdeenshire. [S.]
- Brierley, Joseph, B.Sc. (Manc.), B. Comm., 13, Kershaw Street, Failsworth, Manchester. [Sixteen years' experience.]
- Briggs, Dennis Brook, B.A. (Cantab.), Bradford College, nr. Reading, Berkshire. [S.]
- Britton, Hubert Thomas Stanley, B.Sc. (Brisbane), "Lynn Dene," Court Road, Kingswood, Bristol. [M.]
- Brodie, Neal, B.Sc. (Dunelm), Government Test House, Calcutta. [M.]
- Bruce, Alexander, B.Sc. (Edin.), The Laboratory, Hyde Park Corner, Colombo, Ceylon. [M.]
- Bunce, Albyn, c/o Messrs. Cannington, Shaw & Co., Ltd., Sherdley Works, St. Helen's, Lancs. [Central Tech. Coll., London; Nineteen years' experience.]
- Bunting, Henry Herbert, Oficina de Ensayes, The Peruvian Corporation, Callao, Peru. [Normal School of Science, London; Seventeen years' experience.]
- Card, Čaptain Štanley Walter, B.Sc. (Lond.), 14, Spring Road, Ipswich.
  [S.]
- Chick, Oliver, 31, Auckland Road, Cranbrook Park, Ilford, Essex. [Finsbury Tech. Coll.; Fifteen years' experience; Research.]
- Child, Arthur James, B.Sc. (Lond.), Oaklands, Edgware, Middlesex. [S.]
- Childs, Hugh, B.Sc. (Vict.), Grove House, Chatteris, Cambridgeshire. [S.]

- Clifford, Sydney George, 51, Peak Hill, Sydenham, London, S.E. 26. [Finsbury Tech. Coll. Certif; Nine years experience; Publications.]
- Cooper, William Suddaby, B.Sc. (Lond.), 29, Glencoe Street, Hull. [Nineteen years' experience.]
- Coupe, Geoffrey, 23, High Street, Shoeburyness, Essex. [West Ham Mun. Tech. Inst.; S.; M. S. M.; Seven years' experience.]
- Course, Herbert Edwin, Water Works, Gold Coast Colony, West Africa.
  [Finsbury Tech. Coll. Dip.; Seventeen years experience.]
- Craven, Reginald, A.R.C.S., 19, Eardley Crescent, Earl's Court, London. S.W. 5. [M.: Research.]
- Cunningham, Henry Joseph, B.Sc. (Liv.), 26, Bolton Road, Harlesden, London, N.W. 10. [S.; M.]
- Damon, William Aethelbert, B.Sc. (Birm.), 17a, Kidbrooke Park Road, Blackheath, London, S.E. 3. [Nine years' experience.]
- Dawson, Stanley Ernest, A.M.C.T., The Cottage, Frewland Avenue, Davenport, Stockport. [Seven years' experience.]
- Drew, Royston Barry, M.Sc. (Melb.), Kilwenny, Eltham, Melbourne, Victoria, Australia. [M.]
- Dunnicliff, Horace Barratt. M.A. (('antab.), B.Sc. (Lond.), The Cordite Factory, Aruvankadu, Nilgiris, S. India. [M.]
- Dutton, Frank. B.Sc. (Vict.), 102, Woodwarde Road. E. Dulwich, London, S.E. 22. [Twenty-five years' experience.]
- Eggington, Alfred Thomas, M.C., A.R.C.S., B.Sc. (Lond.), The Hawthorns, Ibstock, near Leicester. [S.]
- Elphick, Frederick Charles, 50, College Court, Hammersmith, London, W. 6. [East London College; Twenty-one years' experience.]
- Elworthy, Reginald Thomas, B.Sc. (Lond.), c/o Mines Branch, Department of Mines, Ottawa, Canada. [M.]
- English, Ernest Walter Fulton, M.A. (Cantab.), Directorate of Chemical Inspection, Woolwich Arsenal, London, S.E. 18. [Seventeen years' experience; M.]
- Evans, Gerald Clifton, Merlin, Banbury Road, Stratford-on-Avon. [King's College, London; Twenty years' experience; Research.]
- Ferguson, John Martin, A.R.T.C., "Craigengar," Dalry Road, Beith. [Six years' experience.]
- Findlater. James, A.R.T.C., 2. The Green, Bromborough Pool, New Ferry, near Birkenhead. [Works Chemist.]
- Fisher, Ernest Arthur, M.A., B.Sc. (Oxon.), Rothamsted Experimental Station, Harpenden, Herts. [S.]
- Fletcher, Dugald Neil, A.R.T.C., Little Aiden, Kilereggan, Dumbartonshire [S.]
- Foulds, Robinson Percy, M.Sc. (Viet.), Stanley Villa, Colne, Lanes. [8.]
- Froysell, Herbert Henry. 66. Hartington Road. Liverpool. [Liverpool Univ.; Thirty-three years' experience.]

- Garner, William Edward, M.Sc. (Birm.), University of London Club, 21, Gower Street, London, W.C. [M.]
- Gibbs, Geoffrey Harcourt, B.Sc. (Lond.), 18, Russell Road, Kensington, London, W. [S.]
- Gillison, Wilfred, B.A. (Cantab.), 274, Well Hall Road, Eltham, London, S.E. [M.; Twelve years' experience.]
- Goldic, Ernest Murray, 4, Everton Road, Addiscombe, Croydon. [Technische Hochschule, Hanover; Royal College of Science, London; M.; Thirty years' experience.]
- Goodlet, John Inglis, 54, Linden Grove, Peckham Rye, London, S.E. 15. [Goldsmiths' Inst., King's Coll., Sir John Cass Tech. Inst., and S. W. Polytechnic, London; Twenty years' experience.]
- Gray, Frederick Henry, B.Sc. (Lond.), A.R.C.S., 4, Radmoor Road, Loughborough, Leicestershire. [Nine years' experience; Research.]
- Gray, William Carlan, A.R.T.C., 112, Beechwood Drive, Broomhill, Glasgow. [S.]
- Griffiths, George Eric, 5, Bertram Road, Manningham, Bradford, Yorks. [Bradford Tech. Coll. Dip.; S.]
- Guy, William Robert, 412, Quentin Road, Blackheath, London, S.E. 13. [Royal Tech. Coll., Glasgow; M.]
- Hampton, Wilfred Marsh, B.Sc. (Lond.), Lyndhurst, 5, Forster Street, West Smethwick, Staffs. [Seven years' experience; Works Chemist; Glass.]
- Harper, William, B.Sc. (St. Andrews), c/o Messrs. Lever Bros. (Japan), Ltd., Sannomiya, P.O. Box 174, Kobe, Japan. [Chief Chemist; Eleven years' experience.]
- Hay, Robert, 72, The Rand, Eastriggs, Dumfriesshire. [Glasgow Univ.; M.]
- Heap, Ernest Thomas Ashley, B.Sc. (Glas.), 9, Newark Drive, Pollokshields, Glasgow. [S.; M.]
- Henry, John, A.R.T.C., 11, Pollok Gardens, Shawlands, Glasgow. [8.]
- Higgins, Sydney Herbert, M.Sc. (Manc.), The Bleachers' Association, Ltd., 4, Norfolk Street, Manchester. [Twelve years' experience; Research.]
- Hill, Alfred, B.Sc. (Aberd.), 72, Bedford Place, Aberdeen. [Nine years' experience.]
- Hill, John Stableford, 82, The Rand, Eastriggs, Dumfriesshire. [Nineteen years' experience; M.]
- Hole, Ernest George, B.Sc. (Birm.), 85, St. Thomas's Road, West Hill, Hastings. [M.]
- Hollins, Cecil, B.Sc. (Lond.), 63, Smedley Road, Cheetham, Manchester. [M.; Research.]
- Hopkins, Francis Albert Reginald, B.Sc. (Birm.), 52, Highbridge Road, Wylde Green, Birmingham. [S.]
- Hutchinson, James Joseph, Cecilville, Dollymount, Dublin. [Royal Coll

of Science, London and Ireland, and Queen's College, Galway; Twenty-five years' experience.

Hynes, James Edward, M.Sc. (Manc.), 1, Olive Villas, Banks Avenue, Pontefract. [S.]

Ingold, Christopher Kelk, B.Sc. (Lond.), A.R.C.S., Cassel Cyanide Company, Shuna Street, Maryhill, Glasgow. [M.]

Janson, James Theodore, B.Sc. (Lond.), 33, Belgrave Road, London, S.W. 1.
[S.; D.S.O. and bar, four times mentioned in Despatches.]

Jeffery, John Hugh, c'o Messrs. New Pegamoid, Ltd., Marshside Works, Lower Edmonton, N. [King's College, London: Ten years' experience.]

Jenkins, Percy Gwynn, 15, St. Luke's Road, Bayswater, London, W. 11. [Finsbury Tech. College; Works Chemist.]

Jennison, Lieut. Hubert, A.M.C.T., 8, Selbourne Villas, Manningham, Bradford. [S.]

Jones, Henry Humphreys, 13, Berkley Street, Liverpool. [Liverpool Univ. and Technical School; Sixteen years' experience.]

Jones, Herbert John, A.M.S.T., 81, Ham Park Road, Stratford, London, E. 15. [Nineteen years' experience.]

Keane, John, M.Sc. (Dublin), 6, Shamrock Villas, Drumcondra, Dublin. [Research.]

Kemp, Charles Norman, B.Sc. (Edin.), Ivy Lodge, Laverockbank Road. Edinburgh. [M.]

Kirkup, Frank, B.Sc. (Durham), 26, Osborne Road, Newcastle-on-Tyne.
[S.]

Kitto, William Victor, B.A. (Toronto), 317, Queen Street, Ottawa. Ontario, Canada. [Sixteen years' experience.]

Knaggs, Lieut. John, B.Sc. (Lond.), A.R.C.S., South Street, Bridlington, Yorks. [S.]

Lazell, Harold, B.Sc. (Lond.), 75, Comeragh Road, Barons Court, London, W. 14. [Chemist and Works Manager.]

Lee, William Bell, B.Sc. (Lond.), 2, St. John's Road, Knutsford, Cheshire.
[M.]

Leipper, Alexander Dawson, 14, Richmond Terrace, Gateshead. [Royal Tech. Coll., Glasgow; Twenty years' experience.]

Levy, Joseph Frederick, 111, Wilberforce Road, Finsbury Park, London, N. 4. [King's College, London; S.]

Linch, Robert, 30, Castleton Road, Goodmayes, Ilford, Essex. [Finsbury Tech. Coll.; I. I.; S.; M.]

Lloyd, Joseph, A.M.C.T., 46, Station Road. N. Reddish, Stockport. [Thirteen years' experience.]

Long, Lieut. Bertram Raymond, B.A. (Dub.), 6. Park Villas, Stillorgan Park, Dublin. [S.]

Lush, Ernest Joseph, B.A. (Cantab.), 14, Alexandra Road, Stoneygate, Leicester. [S.] Macfarlane, William Wylie, D.C.M., Fingarry, Milton of Campsic, Stirlingshire, N.B. [Royal Tech. Coll., Glasgow; S.; M.]

Mackenzie, David. Messrs. The Midland Vinegar Co., Ltd., Aston Cross, Birmingham. [Royal Tech. Coll. Glasgow; Ten years' experience; Works Chemist.]

Mackenzie, Peter, Quetta House, Lancaster Road, Rugby. [Royal Tech. Coll., Glasgow; S.]

Madgin, Walter Matthew, M.Sc. (Durham), 3, Matfen Place, Fenham, Newcastle-on-Type, [S.]

Malpas, Harold Joseph, 12, Grand Parade, Teddington, Middlesex. [University College, Southampton; Seven years' experience; M.]

Marsden, Miss Alice May, B.Sc. (Vict.), Boscombe, Imperial Road, Matlock. [Seven years' experience.]

Marston, Harry Bulmer, B.Sc. (Lond.), 5, De Grey Street, Mayors' Walk, York. [S.]

Martin, Lieut. James Wright, B.Sc. (Glas.), Wallace Grove, Kilbarchan, Renfrewshire. [S.]

Martin. William Francis, 18, Moat Place, Edinburgh. [Heriot-Watt Coll., Edinburgh; Twenty-four years' experience.]

Mather, Wilfred, A.M.S.T., Jessamine Cottage, Audenshaw, near Manchester. [Seven years' experience.]

Maxwell, Miss Nora Irene, B.Sc. (Q.U.B.), 21, Deramore Park, Belfast. [Demonstrator, Queen's University, Belfast.]

McErvel, Miss Nora, B.Sc. (Q.U.B.), 110, Eglantine Avenue, Belfast, [Demonstrator, Queen's University, Belfast.]

McIver, Miss Constance Mary, B.Sc. (Lond.), 44, Lebanon Gardens, Wandsworth, London, S.W. 18. [Govt. Lab.]

McLaren, Miss Mary Campbell, M.A., B.Sc. (Glas.), 30, Millbrae Crescent, Langside, Glasgow. [M.]

Mendoza, Mordecai, B.Sc. (Lond.), 35, (entral Road, W. Didsbury, Manchester. [Eight years' experience; Dyes Research Chemist.]

Mitchell, Miss Isabel, B.Sc. M.B., Ch.B. (Edin.), 56, Kyle Park, Uddingston, near Glasgow. [Physiological Chemist.]

Mitchell, Robert Kay Sabiston, B.Sc. (Edin.), 25, Montrose Terrace, Edinburgh. [Post-graduate work.]

Morton, Allan, M.Sc. (Liv.), 167, Trent Boulevard, West Bridgford. Nottingham. [M.]

Mumford, Major Ernest Moore, M.Sc. (Manc.), 75, High Street, C.-on-M., Manchester. [S.; M.]

Naish, William Archibald, A.R.S.M., 24, University Mansions, Putney, London, S.W. 15. [Twelve years' experience.]

Neech, Hubert Richard, Hetland Cottage, Ruthwell, Dumfriesshire. [Lincoln Mun. Tech. School; Twenty years' experience; M.]

Newcomb, Captain Clive, I.M.S., B.A. (Oxon.), M.B. (Oxon.), M.R.C.S., L.R.C.P., 48, Leigham Court Road, Streatham, London, S.W. 16. [8.]

- Niven, Charles David, M.A., B.Sc. (Aberd.), 6, Chanonry, Old Aberdeen, Scotland. [Post-graduate work.]
- Norman, David John, 103, Howbury Street, Bedford. [Finsbury Tech. Coll. Dip.; S.]
- Palmer, Aleek Richard, B.Sc. (Lond.), 5. Pleasant Place, Bond Street, Vauxhall, London, S.W. 8. [Gas Work; Rare Metals.]
- Parsons, Alfred Tennyson, B.Sc. (Dun.), 25, Westwell Road, Streatham, London, S.W. 16. [Govt. Lab.; S.]
- Parsons, Nigel Montgomerie, B.A. (Oxon.), 19b, Pembridge Square, London, W. 2. [S.]
- Preston, Haydn, A.R.C.S.. The Grammar School, Caistor, Lines. [M. Research.]
- Proud, Miss Annie Kathleen, B.Sc. (Lond.), Parkfield, Grove Park, Lee, London, S.E. 12. [Research.]
- Rae, William Norman, M.A. (Cantab.), Government Technical School, Colombo, Ceylon. [M.; Research.]
- Rai, Hashmat, B.A. (Punjab), M.Sc. (Liv.), Government College, Lahore. [Asst. Prof. of Chemistry.]
- Reade, Thomas Harold, M.Sc. (Birm.), 118, Tettenhall Road, Wolverhampton. [S.; Research.]
- Reynolds, John. Brook House, Meltham Mills, Huddersfield. [Huddersfield Tech. Coll.; S.]
- Richards, Evan Matthew. B.Sc. (Lond.), 54, Springfield Road, St. John's Wood, London, N.W. 8. [S.]
- Ricketts, Joseph, B.Sc. (Lond.), 91. Coldershaw Road, West Ealing, London, W. 13. [S.]
- Robertshaw, George Frederick, Mornay, Kearsley Road, Higher Crumpsall, Manchester. [Ten years' experience; Dyes.]
- Robertson, Captain John Alexander, Coltswood House, Gartsherrie, by Coatbridge, Lanarkshire. [Royal Tech. Coll., Glasgow; S.]
- Robinson, Frederick John, Hughenden Lodge, Cowley, Middlesex. [Glasgow Univ.; Nine years' experience.]
- Rosenblum, Miss Nathalie, M.Sc. (Vict.), 55, Cliff Street, Keighley. [Teaching.]
- Scott, Major Thomas, M.C., M.Sc. (Liv.), 46, Merton Road, Bootle, Liverpool. [S.]
- Shatwell, Hugh George, B.Sc. (Vict.), 42. City Road, Openshaw, Manchester.
  [S.; Research.]
- Shoesmith, John Baldwin. B.Sc. (Vict.), 2, Thursby Square, Burnley, Lancs, [Research.]
- Silver, Leonard, B.Sc. (Lond.), A.R.C.S., Cemetery Lodge, Old Road, Gravesend. [S.]
- Smith, Captain Cyril Montague, Inglecroft, Cranley Villas, Muswell Hill Road, London, N. 10. [University College, London; Twelve years' experience; S.]

Smith, Hubert Proctor, Inglewood, Shotton, Chester. [Leeds School of Science and Technology; Chief Chemist and Metallurgist; Over twenty years' experience.]

Smith, William, 10, Main Street, Stevenston, Ayrshire. [Royal Tech. Coll., Classow, Din., S.]

Glasgow, Dip.; S.]

Staveley, John, B.Sc. (Leeds), 11, Roper Street, Whitehaven, Cumberland. [8.]

Sterne, Edward Tyghe, B.Sc. (Ont.), Trenton, Ontario, Canada. [S.; Research.]

Stewart, Lauchlan Macquarie, M.A., B.Sc. (Edin.), B.Sc. (Agric.), Tighnamara, Cuan, Balvicar, Argyllshire. [M.]

Sutcliffe, Hubert Thomas, B.Sc. (Vict.), 45, Church Street, Harle Syke, near Burnley, Lancs. [M.; S.]

Taylor, Captain Edward McKenzie, M.B.E., B.Sc. (Dun.). Berkley House, Roxwell Road, Chelmsford. [S.; Mentioned in Despatches.]

Thompson, Herbert Bryan, M.Sc. (Birm.), Ph.D. (Wurzburg), Redcroft, Shoberall, Burton-on-Trent. [S.]

Thompson, Captain Mark, B.A. (Cantab.), 124, Wilford Grove, Nottingham.
[S.]

Trickett, Anthony Berry, M.Sc.Tech. (Manc.), 245, New North Road, London, N. 1. [Govt. Lab.]

Turner, Captain Bertrand, B.Sc. (Birm.), 5, Richmond Road, Wanstead, London, E. 11. [S.]

Voss, Walter Arthur, "Fairlight Glen," Eastwood Road, Rayleigh, Essex. [Finsbury Tech. Coll.; Research.]

Walker, Frederick Thomas, B.Sc. (Lond.), Brendon, Clarence Road, Horsham, Surrey. [M.; S.]

Walters, David Henry, B.Sc. (Wales), Maesgwyn, Gnoll Park Road, Neath, Glam. [M.]

Watson, Thomas, M.A. (California), 2151, Center Street, Berkeley, California, U.S.A. [Fifteen years' experience; Bio-chemical Research.]

Watterson, James Horatio, B.Sc. (Lond.), Braeside, Magdale, Honley, Huddersfield. [Works Chemist; Dyes.]

Watterson, Norman Frederick, Kirk Ella, Constitution Hill, Wellington, Salop. [Walsall Mun. Tech. Inst.; M.]

Weil, Victor Maurice, B.Sc. (Lond.), Rokesley Lodge, St. George's Road, Kemptown, Brighton, Sussex. [Eleven years' experience: Research.]

Wheatley, Henry, B.Sc. (Lond.), 69, Godwin Road, Forest Gate, London, E. 7. [S.]

Whinyates, Leonard, A.M.C.T., B.Sc.Tech. (Manc.), Glen Mona, Rochdale Road, Blackley, Manchester. [Eight years' experience.]

Whitaker, Joseph Edward Firth, B.Sc. (Lond.), B.A. (Cantab.). Liverpool College, Sefton Park Road, Liverpool. [S.]

Whitfeild, Bernard Wyndham, 48, Upper Richmond Road, East Putney, London, S.W. 15. [Finsbury Tech. Coll.; S.] Whitton, William Alexander, M.Sc. (Liv.), The Grammar School, Ross. Herefordshire. [Eighteen years' experience.]

Whitworth, James Bell, B.Sc. (Wales), 2, Church Street, Lampeter, Cardigan.
[S.]

Wikner, Sigurd Albert Walfrid, The Newcastle-on-Tyne and Gateshead Gas Company, By-Products Works, St. Anthony's, Newcastle-on-Tyne. [Hull Mun. Tech. School; Nineteen years' experience.]

Williams, Edwin, B.Sc. (Lond.), 30, De Burgh Street, Canton, Cardiff. [S.] Wilson, John, M.Sc. (Vict.), Apsley House, Heywood Street, Bury, Lancs. [S.; Seven years' experience.]

Wishart, Robert Scott, M.A., B.Sc. (Edin.), Messrs. Levinstein's, Ltd., Manchester. [S.]

Wood, William, 71, High Street, Waltham Cross, Herts. [Zurich Polytech-'nikum; Diploma; M.; Thirteen years' experience.]

### Students.

Adams, Basil Albert, Lynwood, 43, Cromwell Road, Beckenham, Kent.

Bate, Philip James, 4, Station Parade, Sanderstead, Surrey.

Beardwood, Frank, "Barton." Fulwood Hall Lane, Fulwood, Preston.

Bell, James Richard, 14, Ryehill Grove, Leith.

Birch, Stanley Francis, 28, Marloes Road, Kensington, London, W. 8.

Carey, Cecil Ernest, 59, Harefield Road, Brockley, London, S.E. 4.

Chapman, Arthur William, 68, Geraldine Road, Wandsworth. London, S.W. 18.

Coles, Thomas William, 36, Marsden Street, Barrow-in-Furness.

Dunn, Maurice William, 7, Emerson Road, Harborne, Birmingham.

Fisher, Alfred, 50, Exeter Road, Nottingham.

Higgins, John Stuart Reginald, "The Brae," Glasgow Road, Perth.

Hill, Joseph, 58, Spring Street, Accrington, Lancs.

Himmat, Mahmoud Ahmed, Government Analytical Laboratory, Cairo.

Hopkins, Sidney John, London House, Hambledon, Hampshire.

Howard, Thomas George, 42, St. Albans Avenue, Bedford Park. London, W. 4.

Lavery, David, 91, Coventry Drive, Dennistoun, Glasgow.

Martin, George Frank, 85, Church Hill, Walthamstow, E. 17.

Newton, Leonard Owen, 29, St. Mildred's Road, Lee, London, S.E. 12.

Pagella, Eugene, "The Poplars No. 2," 173, Upper Priory Road, St. Denys, Southampton.

Powers, Harold Edward Charles, 4, Grove Crescent, Woodford, London, E. 18.

Rhodes, Henry Taylor Fowkes, 18, Belmont Hill, Lee, London, S.E. 13.
Taylor, Jack Francis Mahon, 10, Meynell Crescent, South Hackney, London
E. 9.

Williams, Albert, 103, Thornbury Avenue, Bradford, Yorks.

Williams, Harold Bishop, "Ashley," 6, Hamlet Road, Upper Norwood, London, S.E. 19.

Williams, Ralph, 15, St. Vincent Road, Newport, Mon.

Woodward, Miss Elsie, 80, St. Mary Street, Weymouth, Dorset.

Woolley, Raymond, 5, Darwin Terrace, Derby.

Youll, John William Reginald, "Keswick," Rainsford Avenue, Chelmsford.

# Change of Name.

Sidney Henry Groenewoud to Greenwood. (Fellow).

### DEATHS.

#### Fellows.

William Beam, M.A., M.D. (Pennsylvania). John Richard Brooke. Professor Adrian John Brown, Hon. M.Sc. (Birm.), F.R.S. William James Cousins. Harold Cecil Greenwood, O.B.E., D.Sc. (Manc.).

# Francis Edward Lott, A.R.S.M.

George William Alvey Teanby.

### Associates.

Owen Charles Edwards, B.Sc. (Wales). Glyn Jones, B.Sc. (Wales), (killed in action, October, 1918). Lieut. Lawton Keir Rodger.

### Students.

Lieut. Reginald Greaves, R.G.A. (died on service). Joshua Biram Crossley Wigfield, 2nd Lieut. R.E. (killed in action).

# General Notices.

**Examinations.**—The Council give notice that Examinations will be held in January, 1920. Future arrangements will be communicated to candidates who notify the Registrar (without delay) of their intention to present themselves.

Notice to Associates.—Associates elected prior to November, 1916, who can produce evidence satisfactory to the Council that they have been continuously engaged in the study and practical applications of chemistry for at least three years since their election to the Associateship, can obtain forms of application for election to the Fellowship.

Appointments Register.—A Register of Fellows and Associates of the Institute of Chemistry who are available for appointments is kept at the Offices of the Institute. For full information, inquiries should be addressed to the Registrar.

Fellows and Associates are invited to communicate with the Registrar in any instance in which they are able to assist in securing appointments for qualified chemists.

The Library.—The Library is open for the use of Fellows, Associates and Registered Students, between the hours of 10 A.M. and 6 P.M. on week-days (Saturdays: 10 A.M. and 2 P.M.) except when examinations are being held.

Department of Overseas Trade.—The Comptroller-General of the Department of Overseas Trade has asked the Institute to notify Fellows and Associates who may be proceeding abroad, as technical representatives of industrial undertakings, that His Majesty's Consular Officers and Trade Commissioners in foreign countries and in various parts of the Empire are desirous of losing no opportunity of rendering them assistance. Such Officers and Commissioners, therefore, will be glad if they may be advised beforehand of impending visits, or notified of the arrival of members visiting trade centres, in order to bring commercial, diplomatic, consular and kindred services into closer personal touch with British firms and companies.

The Comptroller-General asks that representatives of British firms, when on business abroad, should not hesitate to call on His Majesty's Consular Officers and on the Commercial Diplomatic Officers and in the case of the Dominions)

on His Majesty's Senior Trade Commissioners.

THE

# INSTITUTE OF CHEMISTRY

OF

# GREAT BRITAIN AND IRELAND.

FOUNDED, OCTOBER, 1877.

INCORPORATED BY ROYAL CHARTER, JUNE, 1885.

# REGISTER OF

# FELLOWS, ASSOCIATES, AND STUDENTS

(With Notes of Service with the Forces: 1914-1919).

AUGUST, 1919.

BY ORDER OF THE COUNCIL,

RICHARD B. PILCHER,

Registrar and Secretary.

30, Russell Square, London, W.C. 1.

# Honorary Secretaries of Local Sections.

Birmingham and Mid-	F.	C. A.	Н.	Lantsberry,	M.Sc.,	F.I.C., 63,
land.		Walfo	rd R	oad, Sparkbi	rook, B	irmingham.

Edinburgh and East of B. D. W. Luff, F.I.C., S5. Ashley Terrace, Scotland. Edinburgh.

Glasgow and West of T. A. Wilson, F.I.C., 91, New Road, Scotland. Ayr.

Gretna and District ... William Caw, F.I.C., No. 3, Staff Quarters, East Riggs, Dumfriesshire.

Ireland ... Dr. A. G. G. Leonard, F.I.C., 18, Belgrave Road, Dublin.

Liverpool and North- John Hanley, F.I.C., 7. University Road, Western Counties. Bootle, Liverpool.

London and South- William Bacon, B.Sc., F.I.C., 27, Wal-Eastern Counties. brook, London, E.C. 4.

Manchester and Dis- David Cardwell, M.Sc., F.I.C., 50, Alextrict. andra Road, South, Manchester, S.W.

Newcastle-on-Tyne and Dr. J. T. Dunn, F.I.C., 10, Dean Street, North-East Coast. Newcastle-on-Tyne.

South Wales ... A. J. Shelton, F.I.C., 10, Park Road, Clydach, S.O., Glam.

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# REGULATIONS RELATING TO THE REGISTER.

Inaccuracies in the Register should be reported immediately to the Registrar.

Resolution of Council, passed Friday, March 13th, 1891:-

"That in all future lists of Members of the Institute of Chemistry, no degree be inserted without the name of the University granting the degree being annexed; further that no degree or other qualification be inserted unless it be shown to be genuine to the satisfaction of the Council."

Resolution of Council, passed Friday, January 20th, 1893:—

"That, in future, all letters indicating Membership of any Society, except the Royal Society (London), be omitted in the Register from all names of Members of the Institute."

# Bye-law 70:-

"If any Fellow or Associate shall allow his annual subscription to be in arrear for one year, he shall be liable to be excluded from the Membership or to be suspended in the manner provided by Clause 16 of the Charter."

Under the powers conferred by this Bye-law, the Council have instructed the Registrar to remove from the Register the name of any Member or Student whose subscription for the current year shall remain unpaid on December 31st.

# INSTITUTE OF CHEMISTRY

OF GREAT BRITAIN AND IRELAND.

# OBJECTS AND POLICY OF THE INSTITUTE.

FOUNDATION.—The Institute of Chemistry was established in 1877. There were then comparatively few practitioners in chemistry apart from the professors in the Universities and Colleges; but the Colleges were beginning to train chemists, and a number of the scientific men of that time foresaw the need for founding an Institution which should supply a hall-mark of competency to practise. Their aim was to provide the public with the means of recognising those who had been properly trained and proved to be competent by an impartial authority.

A nucleus was formed of chemists who had already established their positions, and a Council was elected, consisting of representatives of the various branches of the profession (analysts, consultants, government chemists, technologists and teachers). A scheme of training was formulated and examinations were instituted.

Incorporation by Royal Charter.—In 1885 the Institute was granted a Royal Charter with definite authority to examine, to grant certificates of competency, and to register persons qualified to practise. The aims of the Institute as stated in the Charter included the elevation of the profession of chemistry and the maintenance of the efficiency, integrity and usefulness of persons practising the same, by compelling the observance of strict rules of membership and by setting up a high standard of scientific and practical efficiency.

OUTLINE OF THE REGULATIONS.—In pursuance of the provisions of the Charter and Bye-Laws, the Council have made Regulations (outlined below) for the admission of Students, Associates and Fellows

The Studentship.—A Candidate \* for registration as a Student of the Institute is required to produce evidence that he is upwards of 17 years of age, and that he has passed a Preliminary Examination in subjects of general education, approved by the Council of the Institute. He must also show that, at the time of making application for registration, he is working at an institution recognised by the Council, or under the direction of a Fellow of the Institute, in a laboratory or works approved by the Council, with the object of qualifying for the practice of professional Chemistry.

QUALIFICATIONS FOR ASSOCIATESHIP AND FELLOWSHIP.—The extent of the training and the scope and character of the examinations for membership have been modified from time to time, in order to maintain a standard corresponding to the highest training obtainable at the best institutions in the country.

The method of conducting the examinations has given them a distinctly practical bias, and has exercised a decided effect on the advancement of higher education in chemical science, especially on the courses of those Universities and Colleges from which a steady flow of Candidates has been maintained.

Candidates for ADMISSION TO THE ASSOCIATESHIP are required to produce evidence of having passed an approved preliminary examination, but in special cases the Council consider other evidence of general education.

The training for the Associateship extends over at least four years. Admission to the Examination for the Associateship is open to:—

- (i.) Candidates who have been systematically trained in a recognised University or College;
- (ii.) Candidates who have been trained partly in recognised Universities or Colleges and partly under Fellows of the Institute in laboratories or works.

<sup>\*</sup> Women are admitted to the Studentship, Associateship and Fellowship of the Institute.

(iii.) Candidates who have been otherwise trained to the satisfaction of the Council and who have been engaged in the study and practice of chemistry for at least ten years.

Admission to the Associateship without Examination may be granted:—

- (i.) To Candidates who have obtained certain University degrees with Honours in Chemistry or other recognised diplomas:
- (ii.) In exceptional cases, dependent on the consideration by the Council of the Candidate's age, general education, scientific training, experience, original work, etc.;
- (iii.) As a temporary war measure, in the case of properly trained Candidates who have been engaged with the forces or on work of national importance.

Admission to the Fellowship is open to Associates of three years standing by examination: or may be granted, at the discretion of the Council, to those who—

- (i.) Have carried out original research; or
- (ii.) Have devised processes or inventions; or
- (iii.) (In special circumstances) have otherwise satisfied the Council that they are possessed of knowledge and ability equivalent to having fulfilled the conditions contained in (i.) and (ii.).

Candidates who have been systematically trained and who have had considerable experience are, in special cases, examined for the Fellowship without passing through the grade of Associateship.

Candidates who have been systematically trained who have lad considerable experience and who have attained positions of responsibility may, in exceptional circumstances, be elected to the Fellowship without examination.

Present Position of the Institute.—The Institute has now a roll of over 2,750 Fellows and Associates, and of nearly 400 registered students.

Its history bears evidence of the earnest endeavours of the Council and Members towards the organisation of their profession and the maintenance of its efficiency and status.

The qualifications and examinations of the Institute have received

the recognition of the principal Government Departments concerned with chemical appointments, including the Admiralty, the War Office, the Ministry of Munitions, the Department of the Government Chemist, the Board of Agriculture, the Local Government Boards\* and the Colonial Office. The Institute has established examinations, on lines agreed upon with the Local Government Boards,\* which are accepted under the "Regulations as to Competency of Public Analysts," under the Sale of Food and Drugs Acts, and about 96 per cent. of these appointments are held by Fellows of the Institute. The Fellowship and Associateship are also officially recognised by many other authorities both at home and in the Overseas Dominions.

By conferences on professional matters and by the work of the Censors, the Institute has fostered among the Members a sense of mutual responsibility in their relations to the public and to one another as professional men. No institution has done more to raise the status of the profession of chemistry which to-day stands higher than ever in the estimation of the general community.

The Council have taken action successfully on many occasions in upholding the professional interests of chemists where they have been assailed.

The Appointments Register maintained by the Institute provides a means, which is extensively made use of, whereby authorities and employers can obtain the services of chemists whilst Members and others can be informed of vacancies. The Institute has effected a marked improvement in the conditions of appointments involving competence in chemistry.

The Institute possesses excellent headquarters, with Laboratories and Library, and its office is available to Members and others requiring information and advice on all matters of interest to chemists.

DURING THE WAR.—During the war the Institute was of direct assistance to many Government Departments and sub-departments, the profession and the public generally. Advice and help with regard

<sup>\*</sup> The administration of the Sale of Food and Drugs Acts has now been taken over by the Ministry of Health.

to service with the forces or in other work of national importance was freely and impartially rendered available to all chemists and students of chemistry, whether or not they had any connection with the Institute.

THE DESIGNATION "('HEMIST."—It has long been felt by chemists whom the Institute was founded to represent, that those who practise chemistry—as distinct from pharmacy—should be uppermost in the minds of the public when the word "chemist" is used, and the Council are making every effort to attain this end.

Towards More Complete Organisation.—The Regulations for admission to the Institute have been revised in such a way that no properly trained and competent chemist need remain outside its ranks. The complete organisation of the profession, however, cannot be satisfactorily effected without the co-operation of the whole body of trained and competent chemists.

Local Sections.—Local Sections of the Institute have been formed in several important centres. The main objects of such sections is to maintain the interest of the Members in the general welfare of their profession and to promote social intercourse. (See p. 2.)

# ABSTRACTS FROM THE ROYAL CHARTER.

- 14. Any person while being a Member of the Institute may use after his name the Initials (if he be a Fellow of the Institute) F.I.C. or (if he be an Associate of the Institute) A.I.C.
  - 16. If any person while he is a Member of the Institute
  - (1) Allows any person not being either a Member of the Institute or in Partnership with himself as an Analytical or Consulting Chemist to practise in his name as an Analytical or Consulting Chemist or
  - (2) Is convicted of felony or misdemeanour or is finally declared by any Court of competent Jurisdiction to have committed any fraud or

- (3) Is held by the Council on the complaint of any Member of the Institute or of any person aggrieved to have been guilty of any act or default discreditable to the Profession of Analytical or Consulting Chemist or
- (4) Is adjudged Bankrupt or individually or as Partner makes an Assignment for the benefit of Creditors or under any resolution of Creditors or under the Order of a Court of Bankruptcy or under any deed or document has his estate placed in liquidation for the benefit of Creditors or makes any arrangement for payment of a composition to Creditors or
- (5) Shall engage in any occupation which in the opinion of the Council shall be inconsistent with his remaining a Member of the Institute or
- (6) Fails to pay any subscription or other sum payable by him to the Institute under this Our Charter or bye-laws of the Institute for one year after the same has become due

he shall be liable to be excluded from Membership or to be suspended for any period not exceeding two years from Membership by a resolution of the Council passed at a meeting specially convened for that purpose with notice of such purpose at which meeting there shall be present not less than eight of the Members of the Council and for which exclusion or suspension not less than three-fourths of those present and voting shall vote, and the Member having first had an opportunity of being heard, but any such exclusion or suspension may be at any time revoked or modified by the Council at a like meeting by such a majority as aforesaid subject to such terms and conditions (if any) as the Council may think fit, and notice of any resolution for exclusion or suspension shall forthwith be sent to the person affected thereby.

17. If any person ceases for any cause whatever to be a Member of the Institute he shall not nor shall his representatives have any interest in or claim against the funds or property of the Institute nor shall he use any initials after his name implying that he is a Fellow or Associate of the Institute.

# ABSTRACTS FROM THE BYE-LAWS.

54. Every person, prior to his admission as a Fellow or Associate, shall, in the presence of a witness, make and subscribe his name to the following declaration:—

"I (AB), of

- "do solemnly and sincerely declare that while a Fellow (or
- "Associate) of the Institute of Chemistry, I will observe the
- "Regulations thereof. That I will demean myself honourably in
- "the practice of my profession, and to the utmost of my power
- "maintain the dignity and welfare of the Institute."
- 60. Four Censors shall be elected annually by ballot at the first and every subsequent Annual General Meeting by the Members of the Institute present personally at such Meeting, but in case of any equality of votes, the Chairman of the Meeting shall have a second or casting vote. The Council shall nominate not less than five persons from whom the four Censors shall be elected.
- 61. The President of the Institute shall be ex officio a fifth Censor.
- 62. The Censors, or at least three of them, shall investigate all questions arising under Section 16 of the Charter, and they may call the Fellow or Associate so offending before them, and having investigated the case, may admonish or reprimand him; or if they deem the case of sufficient importance, may call upon the person offending to resign his connection with the Institute, and should he decline, may report such Fellow or Associate to the Council, in order that such further steps may be taken as are provided by Section 16 of the Charter.
- 63. In the event of the exclusion or suspension of a Member every Certificate of Membership then held by him shall be delivered up by him to the Council, to be cancelled or to be retained during his suspension.

64. In the event of the exclusion or suspension of a Member the Council shall be at liberty to cause notice thereof to be published in such newspapers or journals as they may select.

### RESOLUTION.

At an Extraordinary General Meeting of the Institute, held on April 27th, 1893, to consider a Report of the Censors, the following Resolution was passed:—

"That the following acts, or any of them, shall be held to be discreditable to the profession of Analytical and Consulting Chemist," viz.:—

(a) Advertising for practice in newspapers, journals, magazines. or other published papers.

(b) Sending out by post, or otherwise, letters, circulars, or cards offering

professional services.

(c) Undertaking through another person or agency the performance of professional work at fees representing only a small fraction of the usual recognised scale of fees for analytical work.

(d) Supplying to other persons, not being qualified chemists, reports upon samples or processes with the knowledge that these other persons will

issue such reports as their own work.

concerning advertised commodities, such certificates being either not based upon the results of an analysis, or containing exaggerated, irrelevant, or merely laudatory expressions, designed to serve the purposes of a trade puff.

(f) The unauthorised use of letters indicating University degrees."

# LIST OF OFFICERS AND COUNCIL

For the Year ending March 1st, 1920.

#### PRESIDENT:

SIR HERBERT JACKSON, K.B.E., F.R.S.

#### VICE-PRESIDENTS:

WILLIAM THOMAS BURGESS.
CHARLES FREDERICK CROSS, B.Sc., F.R.S.
SR JAMES JOHNSTON DOBBIE, LL.D., D.Sc., F.R.S.
GILBERT THOMAS MORGAN, D.Sc., F.R.S.
SR ROBERT ROBERTSON, K.B.E., D.Sc., F.R.S.
GEORGE STUBBS, O.B.E.

#### HON. TREASURER:

EDWARD WILLIAM VOELCKER, A.R.S.M.

#### MEMBERS OF COUNCIL:

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#### CENSORS:

THE PRESIDENT, ex-officio.

ALFRED CHASTON CHAPMAN.
SIR JAMES JOHNSTON DOBBIE, LL.D., D.Sc., F.R.S., Past-President.
BERNARD DYER, D.Sc.
PERCY FARADAY FRANKLAND, LL.D., Ph.D., F.R.S., Past-President.

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HAROLD GOVETT COLMAN, Ph.D., D.Sc.; ARTHUR WILLIAM CROSSLEY, C.M.G., F.R.S.

Examiners for the Final Examination:

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- (d) Organic Chemistry: JOCELYN FIELD THORPE, C.B.E., F.R.S.
  (e) The Chemistry (and Microscopy) of Food and Drugs, Fertilisers and
  Feeding Stuffs, Soils and Water: BERNARD DYER, D.Sc.
  Therapeutics, Pharmacology, and Microscopy: FREDERICK GOWLAND

HOPKINS, D.Sc., M.B., F.R.S.

(f) Biological Chemistry, Bacteriology, Fermentation, and Enzyme Action:
ARTHUR HARDEN, D.Sc., Ph.D., F.R.S.

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#### HON. AUDITORS:

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#### AUDITOR:

DAVID HENDERSON, Chartered Accountant.

REGISTRAR AND SECRETARY: RICHARD BERTRAM PILCHER.

### ASSISTANT SECRETARY:

GEORGE STANLEY WITHERS MARLOW, B.Sc., F.I.C.

<sup>\*</sup> CHAIRMAN.

# Committees for 1919=1920.

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THE PRESIDENT, WITH WILLIAM BACON, OSCAR L. BRADY, W. T. BURGESS, F. H. CARR, CECIL H. CRIBB, H. G. LACELL, WILLIAM MACNAB, AND E. W. VOELCKER.\*

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#### SPECIAL FINANCE COMMITTEE Re BUILDINGS FUND:

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#### GLASS RESEARCH COMMITTEE:

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<sup>\*</sup> CHAIRMAN.

### SPECIAL COMMITTEES—(continued).

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SPECIAL COMMITTEE Re Conference on Training of Chemists:

THE PRESIDENT,\* WITH E. C. C. BALY, C. H. CRIBB, A. FINDLAY, A. HARDEN, GILBERT T. MORGAN, AND EDMUND WHITE.

METRIC COMMITTEE (to consider Report prepared by Conjoint Board of Scientific Societies):

THE HON TREASURER,\* WITH A. CHASTON CHAPMAN, J. T. DUNN, F. J. LLOYD, AND W. M. G. YOUNG.

#### HONORARY CORRESPONDING SECRETARIES:

The main duties of the Honorary Corresponding Secretaries are to afford information to Candidates desirous of joining the Institute, and to advise the Council with respect to matters of local professional interest.

British East Africa.

VINCENT HENRY KIRKHAM, B.Sc.

THE COMMONWEALTH OF AUSTRALIA.

THOMAS COOKSEY, B.Sc., Ph.D. (New South Wales); JOHN BROWNLIE HENDERSON (QUEENSLAND); EDWARD HENRY RENNIE, D.Sc. (S. Australia); ARTHUR EDGAR LEIGHTON (VICTORIA).

THE DOMINION OF CANADA.

WALTER CHARLES CARTER (NOVA SCOTIA); FRANK THOMAS SHUTT, M.A., D.Sc. (ONTARIO); WILLIAM ROBERT LANG, D.Sc. (ONTARIO); FREDERICK MURRAY GODSCHALL JOHNSON, Ph.D. (QUEBEC).

EGYPT.

ALFRED LUCAS.

THE EMPIRE OF INDIA.

JOHN CHARLES BURNHAM, C.S.I., B.Sc. (MADRAS); GILBERT JOHN FOWLER, D.Sc. (MYSORE),

<sup>\*</sup> CHAIRMAN.

MAURITIUS.
HAROLD TEMPANY, D.Sc.

THE DOMINION OF NEW ZEALAND.
THOMAS HILL EASTERFIELD, M.A., Ph.D.
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WILLIAM REST MUMMERY.

THE STRAITS SETTLEMENTS AND THE FAR EAST. FRANKLAND DENT, Ph.D., M.Sc.

THE UNION OF SOUTH AFRICA.

CHARLES FREDERICK JURITZ, M.A., D.Sc. (CAPE PROVINCE);

JOHN McCRAE, Ph.D. (TRANSVAAL);

JAMES SPRUNT JAMIESON (NATAL PROVINCE)

BRITISH WEST INDIES.

JOHN PEDROZO D'ALBUQUERQUE, M.A. (BARBADOS);

JOHN BURCHMORE HARRISON, C.M.G., M.A. (BRITISH GUIANA);

SIR FRANCIS WATTS, K.C.M.G., D.Sc. (BARBADOS).

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MESSRS. MARKBY, STEWART & CO., 57, Coleman Street, London, E.C. 2.

#### BANKERS:

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OFFICES AND LABORATORIES OF THE INSTITUTE:
30. RUSSELL SQUARE, LONDON, W.C. 1.

TELEPHONE: MUSEUM, 2406.

## PAST PRESIDENTS:

PASI PRESIDENTS:	
Sir Edward Frankland, K.C.B., D.C.L., F.R.S.	
(Deceased 1899)	1877-18-0
Sir Frederick Augustus Abel, Bart., K.C.B.,	4,000, 4,000
G.C.V.O., D.C.L., F.R.S. (Deceased 1902)	1880-1883
WILLIAM ODLING, M.A., M.B., F.R.S JAMES BELL, C.B., D.Sc., Ph.D., F.R.S. (Deceased	1883-1888
JAMES DELL, C.D., D.Sc., FH.D., F.R.S. (Deceased	1000 1001
Sir William Augustus Tilden, LL.D., D.Sc., F.R.S.	1888-1891
WILLIAM JAMES RUSSELL, Ph.D., F.R.S. (Deceased	1891–1894
1900)	1894 1897
1909)	1897–1900
John Millar Thomson, LL.D., F.R.S	1900–1903
DAVID HOWARD (Deceased 1916)	1903–1906
DAVID HOWARD (Deceased 1916) PERCY FARADAY FRANKLAND, LL.D., Ph.D., F.R.S.	1906–1909
Sir George Thomas Beilby, LL.D., F.R.S	1909-1912
RAPHAEL MELDOLA, D.Sc., LL.D., F.R.S. (Deceased	
	1912-1915
Sir James Johnston Dobbie, LL.D., F.R.S	1915-1918
Sir Herbert Jackson, K.B.E., F.R.S	1918-
PAST CENSORS:	
Sir Frederick Augustus Abel, Bart., K.C.B.,	
G.C.V.O., D.C.L., F.R.S. (Deceased 1902)	1878–80, 1883–88
Sir George Thomas Beilby, LL.D., F.R.S	1909-19
James Bell, C.B., Ph.D., F.R.S. (Deceased 1908)	1884-94
Edward John Bevan	1917–18
Russell Forbes Carpenter (Deceased 1915)	1908-09
Michael Carteighe (Deceased 1910)	1891–92, 1893–95
CHARLES EDWARD CASSAL, Col., V.D	1892-93
CHARLES EDWARD CASSAL, Col., V.D +ALFRED CHASTON CHAPMAN	1919-
Sir ARTHUR HERBERT CHURCH, K.C. V.O., M.A.,	4000 00
D.Sc., F.R.S. (Deceased 1915) FRANK CLOWES, D.Sc WARREN DE LA RUE, LL.D., F.R.S. (Deceased 1889)	1880-83
FRANK CLOWES, D.Sc	1913–14
WARREN DE LA RUE, LL.D., F.R.S. (Deceased 1889)	1878-80
EDWARD DIVERS, M.D., D.Sc., F.R.S. (Deceased 1912)	1907-08
†Sir James Johnston Dobbie, LL.D., F.R.S	1915-
†BERNARD DYER, B.Sc	1919- 1918-19
Sir Edward Frankland, K.C.B., D.C.L., F.R.S.	1310-13
(Deceased 1899)	1880-89, 1892-98, 1899
†Percy Faraday Frankland, LL.D., Ph.D., F.R.S.	1906–
RICHARD JOHN FRISWELL (Deceased 1908)	1898–99
JOHN HALL GLADST ONE, Ph.D., F.R.S. (Decrased 1902)	1879 80, 1882-83, 1884-85
OTTO HEHNER	1901-03
OTTO HEHNER David Howard (Deceased 1916)	1889-92, 1894-1902,
and the state of t	1903-16
+Sir Herbert Jackson, K.B.E., F.R.S	1918-
†Sir Herbert Jackson, K.B.E., F.R.S George McGowan, Ph.D	1914-15
RAPHAEL MELDOLA, D.Sc., LL.D., F.R.S. (Deceased	
1915)	1912-15
1915)	1878-80, 1882-91
John Pattinson (Deceased 1912)	1220-25
SIR WILLIAM RAMSAY, K.C.B., LL.D., Ph.D., F.R.S.	
(Deceased 1916)	1890–91, 1906–10

DAGE GRAIGADS					
PAST CENSORS—continued. Sir Henry Enfield Roscoe, LL.D., F.R.S. (Deceased					
1915) 1878-79, 1883-8 WILLIAM JAMES RUSSELL, Ph.D., F.R.S. (Deceased	34				
1909) 1885–90, 1894–1 SirThomas Stevenson, M.D., F.R.C.P. (Deceased 1908) 1889–90, 93–94,	1904				
Sir Thomas Stevenson, M.D., F.R.C.P. (Deceased 1908) 1889-90, 93-94,	95-1907				
John Millar Thomson, LL.D., F.R.S 1900-12 Sir Thomas Edward Thorpe, C.B., LL.D., Ph.D.,					
F.R.S 1890–92					
F.R.S 1890–92 Sir William Augustus Tilden, L.L.D., D.Sc., F.R.S. 1891–1901, 1901	2–06,				
1910–13					
Augustus Voelcker, Ph.D., F.R.S. (Deceased 1884) 1883-1884					
EDWARD WILLIAM VOELCKER, A.R.S.M 1916–1918  JOHN AUGUSTUS VOELCKER, M.A., Ph.D., B.Sc 1904–1906					
John Thomas Way (Deceased 1883) 1880–1882					
PAST TREASURERS:					
*Charles Romley Alder Wright, D.Sc., F.R.S. (Deceased 1894)	1877-1985				
*David Howard (Deceased 1916)	1885-1903				
*Alfred Gordon Salamon, A.R.S.M. (Deceased 1918)	1903-1918				
*†Edward William Voelcker, A.R.S.M	1918-				
PAST REGISTRARS AND SECRETARIES:					
*SIR WALTER NOEL HARTLEY, D.Sc., F.R.S. (Deceased 1913).					
Secretary to the Organisation Committees	1875–1877				
CHARLES EDWARD GROVES, F.R.S., Secretary CHARLES EDWARD GROVES, F.R.S., Registrar and Secretary	1877-1887				
GEORGE HENRY ROBERTSON (Deceased 1904), Registrar and Secretary	1899 1891				
"John Millar Thomson, LL.D., F.R.S., Registrar and Secretary	1894-1895				
*JOHN MILLAR THOMSON, LL.D., F.R.S., Registrar	1894-1900				
RICHARD BERTRAM PILCHER, Secretary	1895-1963				
†RICHARD BERTRAM PILCHER. Registrar and Secretary	1900 -				
PAST EXAMINERS:					
WILLIAM JAMES RUSSELL, Ph.D., F.R.S. (Deceased 1909)	1878 -1880				
WILLIAM RICHARD EATON HODGKINSON, U.B.E., Ph.D	1880-1882				
CHARLES GRAHAM, D.Sc. (Deceased 1909) London Sir William Augustus Tilden, LL.D., D.Sc., F.R.S Birmingham	1				
Sir William Ramsay, K.C.B., LL.D., Ph.D., F.R.S.					
Sir William Ramsay, K.C.B., LL.D., Ph.D., F.R.S. (Deceased 1916) Bristol Sir Walter Noel Hartley, D.Sc., F.R.S. (Deceased 1913 Dublin Edmund James Mills, D.Sc., F.R.S Glasgow Watson Smith	1883-1887				
Sir Walter Noel Hartley, D.Sc., F.R.S. (Deceased 1913 Dublin	1				
EDMUND JAMES MILLS, D.Sc., F.R.S Glasgow Glasgow					
WATSON SMITH Manchester	1007 1000				
JOHN MILLAR THOMSON, LL.D., F.R.S	1991-1999				
WILLIAM WALTER JAMES NICOL. M.A. D.Sc Birmingham	)				
Sir Walter Noel Hartley, D.Sc., F.R.S. (Deceased 1913) EDMUND JAMES MILLS, D.Sc., F.R.S Glasgow JAMES CAMPBELL BROWN, LL.D., D.Sc. (Deceased 1910) Liverpool	1000 1000				
EDMUND JAMES MILLS, D.Sc., F.R.S Glasgow	-1000-1002				
James Campbell Brown, LL. D., D.Sc. (Deceased 1910) Inverpool	)				
Watson Smith Manchester Thomas Fairley (Deceased 1919) Leeds Thomas Fairley (Deceased 1919) Wyndham Rowland Dunstan, C.M.G., M.A., LL.D., F.R.S	1991 1999				
THOMAS FAIRLEY (Deceased 1919) Heeds	1892-1895				
WYNDHAM ROWLAND DUNSTAN, C.M.G., M.A., LL.D., F.R.S	1892-1896				
FOR THE INTERMEDIATE AND FINAL EXAMINATIONS: 1895-1907.					
WYNDHAM ROWLAND DUNSTAN, C.M.G., M.A., LL.D., F.R.S					
Otto Hehner	1895-1899				
* Honorary. † In Office.					

## PAST EXAMINERS-continued.

PERCY FARADAY FRANKLAND, LL.D., Ph.D., F. BERNARD DYER, D.Sc WILLIAM PALMER WYNNE, D.Sc., F.R.S WALTER WILLIAM FISHER, M.A GEORGE GERALD HENDERSON, M.A., D.Sc., I	• • •	 F.R.S.	• • • •	•••	1896-1900 1899-1903 1900-1904 1903-1907 1904-1907		
FOR THE INTERMEDIATE EXAMINATION GEORGE GERALD HENDERSON, M.A., D.Sc., I BERTRAM BLOUNT	   Ph.D.,	F.R.S.	• • •	 	1907-1908 1907-1911 1908-1912 1911-1915 1912- 1915-		
(Mineral Chemi		.011.					
BERTRAM BLOUNT	 		• • •	• • • • • • • • • • • • • • • • • • • •	1907–1911 1911–1915 1915–		
(Metallurgical Chi	EMISTR	Y.)					
FRANK WILLIAM HABBORD, C.B.E., A.R.S.M. GEORGE THOMAS HOLLOWAY, A.R.C.S. (Deceation Henry Desch, D.Sc., Ph.D	 sed 191		• • •	•••	1907–1911 1911–1915 1915–		
(Physical Chemia Thomas Slater Price, O.B.E., D.Sc., Ph.D. Alexander Findlay, M.A., D.Sc., Ph.D. Frederick George Donnan, Ph.D., F.R.S. †Joseph Edward Coates, O.B.E., D.Sc.			0 1 0	***	1907-1911 1911-1915 1915-1919 1919-		
(Organic Chemis	TRY.)						
GEORGE GERALD HENDERSON, M.A., D.Sc., F WILLIAM HENRY PERKIN, LL.D., Ph.D., F.R. JOHN NORMAN COLLIE, LL.D., Ph.D., F.R.S. Sir WILLIAM JACKSON POPE, K.B.E., M.A., M	N.R.S.	 .R.S.	***	• • • • • • • • • • • • • • • • • • • •	1907-1908 1908-1912 1912-1913 1913-1919 1919-		
(THE CHEMISTRY (AND MICROSCOPY) OF FOOD AND DRUGS, FERTILISERS AND							
To the second se				• • • • • • • • • • • • • • • • • • • •	1907–1911 1911–1915 1915–		
(Biological Chemistry.)							
ALFRED CHASTON CHAPMAN	***	•••	•••		1901–1906 1906–1910 1910–1914 1914–1919 1919–		
(Therapeutics, Pharmacology, and Microscopy.)							
*Sir Thomas Stevenson, M.D., F.R.C.P. (Dec. Arthur Pearson Luff, M.D., B.Sc., F.R.C.I Frederick Gowland Hopkins, M.A., D.Sc., William Henry Willcox, C.B., C.M.G., M.I †Frederick Gowland Hopkins, M.A., D.Sc.,	eased 1 P. M.B., D., B.S	.908) F.R.S. e., M.I	 R.C.P.		1898 1901 1901–1905 1905–1909 1909–1914 1914–		
* Honorary. † In							

# FELLOWS OF THE INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND.

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P.=President; v.-p.=Vice-President; t.=Treasurer; c.=Member of Council; (f.=Censor; e.=Examiner; r.=Registrar; s.=Secretary.: Asst. Sec.= Assistant Secretary.

\* Fellows who have paid Life Compositions.

# Α

Date of Admission

- 1905 \*Abell, Charles Thomas, M.Sc. (Vict.), 68, Trinity Rise, Tulse Hill, London, S.W. 2.
- 1903 Abell, Robert Duncombe, D.Sc. (Wales), Ph.D. (Leipzig), c'o Messrs. Claus & Co., Ltd., Clayton, Manchester.
- 1888 \*Abraham, Alfred Clay, 87, Bold Street, Liverpool.
- 1878 Acworth. Joseph John, Ph.D. (Erlangen), Thornbank, Shootup Hill, Brondesbury, London, N.W. 3.
- 1917 Adam, Hector Robert, Metallurgical Department, School of Mines, P.O. Box 1176, Johannesburg, South Africa.
- 1919 Adam, Matthew Atkinson, B.Sc. (Glas.), 57 and 58, Lincoln's Inn Fields.

  London, W.C. 2; and 6, Featherstone Buildings, High Holborn.

  London, W.C. 1.
- 1897 \*Adams. Arthur, Kelvin House, Edgbaston Road, Smethwick, near Birmingham.
- 1893 Addyman, Frank Thornton, B.Sc. (Lond.)., Stationers' School, Ridge Road, Hornsey, London, N. 8.
- 1887 \*Adeney, Walter Ernest, Hon. D.Sc. (R.U.I.), A.R.C.S.I., Burnham, Queen's Park, Monkstown, Co. Dublin. [c. 1899-1901, v.-p. 1901-4.]
- 1919 Adie, Richard Haliburton, M.A. (Cantab.), B.Sc. (Lond.), 136, Huntingdon Road, Cambridge.
- 1913 Akers, Noel Charles, 48. Victoria Avenue, Hull. (Lieut. R.N.V.R.; D.S.C.).
- 1892 Albuquerque, Professor John Pedrozo d', M.A. (Cantab.), Government Laboratory, Barbados, West Indies.
- 1888 Alcock, Frank Harris, 5, King Alfred's Place, Broad Street, Birmingham.
- 1905 Alderton, Gilbert John, B.Sc. (Lond.), 68, Dunvegan Road, Eltham. London, S.E. 9.
- 1917 Alexander, Thomas James Roland, B.A. (Oxon.), B.Sc. (Lond.), Viewfield. Eglinton Road, Ardrossan.
- 1900 Alford, Henry James, M.D. (Lond.), M.R.C.S. (Eng.), L.S.A. (Lond.), Stafford Lodge, Billet Field, Taunton, Somerset.

#### FELLOWS.

- 1880 \*Altson, Robert Edward, 36, Red Lion Square, London, W.C. 1.
- 1908 Allan, David, co Messrs, Price's Patent Candle Co., Ltd., Bromborough Pool Works, near Birkenhead.
- 1913 Allen, Harry Leonard, B.Sc. (St. Andrews). 501, West 13th Street, Wilmington, Delaware, U.S.A.
- 1918 Allen, William Stow, 21, Montpelier Park, Edinburgh.
- 1907 Alton, William Lester St. John, co The Radium Institute, 16, Riding House Street, Portland Place, London, W. 1. (Sergeant, H.A.C.)
- 1917 Anderson, Edward, I, White's Terrace, Waun Wen Road, Swansea.
- 1917 Anderson, Edward Bertram, B.Sc. (Lond.), M.Sc. (Birm.), c'o Messrs Levinstein, Ltd., Blackley, Manchester.
- 1893 Anderson, Frederic Alfred, B.Sc. (Lond.), Bank Chambers, 24, Grainger Street West, Newcastle-on-Tyne.
- 1918 Andrew, George William, M.Sc. (Manc.). Ironhirst Peat Factory, Ruthwell, R.S.O., Dumfriesshire.
- 1898 Andrews, Edmund Alibert, Emsley. 29, Greenhill Road, Moseley, Birmingham.
- 1901 Andrews, Ernest Robert, 4, Druce Road, Dulwich Village, London, S.E. 21.
- 1914 \*Andrews, William Owen, A.R.C.S. (Lond.), c o Victoria Falls and Transvaal Power Co., Johannesburg, South Africa.
- 1919 Anfilogoff, Nicholas Alexander, Lathol House, Thames Haven, Essex.
- 1878 Angell, Arthur, Regent's Park, Southampton.
- 1906 Annan, John Grieg, B.Sc. (Lond.), 2, Shandon Terrace, Edinburgh.
- 1913 Annett, Harold Edward, B.Sc.Agric.(Lond., Indian Agricultural Service, Dacca, Bengal.
- 1900 Appleyard, George Henry, "Khandalla." 1, Carlton Terrace, Hornsea, E. Yorks,
- 1916 Arbuthnot, Kenneth Charles Guthrie, B.A. (R.U.I.), 14, Church Road, Watford, Herts.
- 1888 \*Archbutt, Leonard, The Yews, Madeley Street, Derby; and Chemical Laboratory, Midland Railway Company, Derby. [c. 1897-1900, 1902-05, 08-11, 13-16.]
- 1912 Archbutt, Sidney Leonard, 25, Bolton Gardens, Teddington, Middlesex. (Corporal, Artists Rifles.)
- 1918 Ardern, Edward, D.Sc. (Manc.), Prior's Lee, Urmston, near Manchester.
- 1918 \*Armstrong, Edward Frankland, D.Sc. (Lond.), Ph.D. (Berlin), F.C.G.I., Greenbank, Latchford, Warrington.
- 1905 \*Arnaud, Francis William Frederick, Sessions House, Maidstone. [c. 1911–14.]
- 1917 Arup, Paul Seidelin, B.Sc. (Lond.), A.C.G.I., No. 4, Sunnyside. Devon, shire Road, Liverpool.
- 1887 Ashby, Alfred, M.B. (Lond.), F.R.C.S. (Eng.), Municipal Buildings. Valpy Street, Reading.

#### FELLOWS.

- 1909 Aston, Bernard Cracroft, Dominion Laboratory, P.O. Box 40, Wellington, New Zealand,
- 1903 \*Aston, Stafford, 68, Stanhope Avenue, Church End, Finchley, London, N. 3.
- 1916 Atack, Frederick William, B.Sc. (Lond.), M.Sc.Tech. (Manc.), 57, Dale Street, Manchester.
- 1914 Atkins, William Ringrose Gelston, O.B.E., M.A., Sc.D. (Dub.), 24, Trinity College, Dublin. (Major, R.A.F.)
- 1887 \*Atkinson, Alexander John, Springeroft, Pentyrch, near Cardiff.
- 1878 \*Atkinson, Robert William, B.Sc. (Lond.), 10, North Church Street, Cardiff.
- 1900 Auchinachie, Peter, Essex Villa, Tavistock Road, Woodford, Essex.
- 1888 Audley. James Aloysius, B.Sc. (Lond.), A.R.C.S. (Lond.), 17. Gladstone Place, Hanley, Stoke-on-Trent.
- 1911 Auld, Samuel James Manson. D.Sc. (Lond.), Ph.D. (Würzburg), University College, Reading. (Lieut.-Colonel, Deputy Asst. Director of Gas Services; M.C.)
- 1912 Aumonier, Frederic Sutcliffe, B.Sc. (Lond.). Government Laboratory, Clement's Inn Passage, Strand, London, W.C. 2.
- 1904 \*Austin, John Hilditch, Allscott, Wellington, Salop.
- 1918 Austin, Percy Corlett, M.A. (Cantab.), D.Sc. (N.U.I.), 24, St. Ki'da's Road, Stoke Newington, London, N. 16.

# B

- 1909 \*Bacon, Rev. Geoffrey Noël, M.A. (Dun.), B.Sc., A.R.C.S. (Lond.), St. Chad's College, Durham. (2nd Lieut., R.G.A.)
- 1909 Bacon, William, B.Sc. (Loud.), 27, Walbrook, London, E.C. 4. [c. 1919-.]
- 1908 Baguley, Allan, B.Sc. (Wales), Bellavista Road, Turffontein, Johannesburg, S. Africa.
- 1916 Bailey, Alan Milsom. 9, Dagmar Road, Stroud Green, London, N. 4.
- 1909 Bailey, Harold James, 10, Park Road, Pendleton, Manchester.
- 1893 Bailey, Thomas Lewis, Ph.D. (Heidelberg), 21, Shavington Avenue, Chester.
- 1908 Bain, Alexander William, B.A., B.Sc. (Lond.). Udney Place, Cromwell Road, Teddington, Middlesex.
- 1918 Bain, Professor James Watson, B.A.Sc. (Toronto), The University, Toronto, Canada.
- 1919 \*Baird, Will, 16, Kinnoull Mansions, Rowhill Road, Clapton, London, E. 5.
- 1888 Baker, Charles Kerslake, A.R.S.M., Prideaux Chambers, 16, Change Alley, Sheffield.
- 1912 Baker, Frederic Guy Stirling, O.B.E., M.A. (Oxon.), Marryatt's Lodge, Snaresbrook, Essex.
- 1887 Baker, Harry, Beacon Field, Weston Road, Runcorn; and c/o The Castner-Kellner Alkali Company, Limited, Weston Point, Runcorn.

#### FELLOWS.

- 1897 Baker, Julian Levett, Dial Cottage, Cookham Road, Maidenhead; and c/o Messrs. Watney, Combe, Reid & Co., Ltd., Stag Brewery, Brewer Street, Pimlico, London, S.W. 1. [c. 1907-09.]
- 1908 Baker, Thomas, D.Sc. (Dun.), 4. The Crescent, Doncaster Road.
- 1913 Ball. Walter Craven. M.A. (Oxon.), Sc.D. (T.C.D.), 45-46, Hop Exchange, Southwark Street, London, S.E. 1. (Major, R.E.)
- 1808 \*Ballantyne, Horatio, 75, Chancery Lane, London, W.C. 2. [c. 1899-1900, 15-18: v.-p. 1918,]
- 18.14 Ballard, Edward George, A.R.S.M., 8, Lansdowne House, Holland Park, London, W. 11.
- 1901 Baly, Professor Edward Charles Cyril, C.B.E., F.R.S., The University, Liverpool. [c. 1918-]
- 1881 Bamber, Henry Kelway, Outram House, Addiscombe, Surrey.
- 1903 Bamber, Montague Kelway, M.R.A.C.. Government Agricultural Chemist, Colombo, Ceylon.
- 1914 Bannister, Charles Olden, A.R.S.M., 60. West Side, Clapham Common, London, S.W. 4. [c. 1917-19.]
- 1908 Barbour, William, M.A., B.Sc. (St. Andrews), Belmont, 43, Sorbie Road, Ardrossan, Ayrshire.
- 1896 \*Bardsley, Joshua, Garrick Lodge, St. Paul's Avenue, Lytham, Lancs.
- 1907 Barke, Harold Frederick, co Messrs. Waterfall & O'Brien, 4, Queen Square, Bristol. (Bombardier, R.F.A.)
- 1900 Barlow, Walter Harry, 194. Beeches Road, West Bromwich.
- 1899 Barlow, William, A.R.C.S.L. 23, Alton Terrace, Fairfield, near Manchester.
- 1900 Barnes, Charles Kepler, M.Sc. (Viet. and Liv.), A.R.C.S I., 9, St. John's Road, Newport, Mon.
- 1888 \*Barnes, Joseph, Highbrake, Arnside, Westmoreland.
- 1887 \*Barnett, Robert William, 11. Exbury Road, Catford Hill, London, S.E. 6.
- 1892 Barraclough, William Herbert, Westholme, Chapeltown, near Sheffield.
- 1908 Barrowcliff, Marmaduke, 13, Shirley Road, Nottingham.
- 1890 \*Barry, Professor Thomas David Collis, co Messrs. Grindlay & Co., 54, Parliament Street, London, S.W. 1.
- 1883 \*Bascombe, Frederick, 73, Tulse Hill, London, S.W. 2.
- 1914 Bassett, Frank Laurence, B.Sc. (Lond.), Chemical Examiner to Government, Baghdad, Mesopotamia. (Captain, Royal West Kent Regt.)
- 1878 Bassett, Henry, 104, Queen Victoria Street, London, E.C. 4.
- \*Bassett, Henry, jun., D.Sc. (Lond.), Ph.D. (Munich), D.ès Sc. (Nancy), University College, Reading.
- 1897 \*Bayley, Frederick Shelburne.
- 1904 Bayly, Harold Goodenough, Hull Street, The Semaphore, S. Australia.
- 1900 \*Bean, Charles Edward, F.R.C.S. (Edin.), M.R.C.S. (Eng.), L.R.C.P. (Lond.), L.S.A., 19, Lockyer Street, Plymouth. (Major, R.A.M.C.)

#### FELLOWS.

- 1897 Beavis, Charles, Ph.D. (Würzburg), Naishcombe House, Wick, near Bristol,
- 1893 Beck, Charles Ridgeway, 53, Norroy Road, Putney, London, S.W. 15.
- 1917 Beckett. Ernest George, Dip. Chem., Ph.D. (Zurich), The Elms, Arnot Hill, Falkirk,
- 1888 Beckett, George Henry, 35, South Beach Road, Ardrossan.
- 1917 Bedford, Sir Charles Henry, D.Sc., M.D. (Edin.), LL.D. (St. Andrews), The Burmah Oil Co., Ltd., 25, Great Winchester Street, London, E.C. 2.
- 1893 \*Bedson, Professor Peter Phillips, M.A., D.Sc. (Dun.), D.Sc. (Lond.), B.Sc. (Vict.), Armstrong College, Newcastle-on-Tyne. [c. 1895-98.]
- 1879 \*Beilby, Sir George Thomas, D.Sc. (Dun.), Hon. LL.D. (Glas.), F.R.S., Langham Hotel, Portland Place, London, W. 1. [c. 1899-1902; v.-p. 1902-05, 12-; P. 1909-12; C. 1909-19.]
- 1895 \*Bell, Albert Edward, 151, Camberwell Grove, London, S.E. 5,
- 1887 \*Bell, Chichester Alexander, B.A., M.B. (Dub.), "Torbrex," Headington Hill, Oxford.
- 1917 Bell, Marcus, Department of Defence, Melbourne, Australia.
- 1906 Benham, Keith Benham, B.Sc. (Lond.), Deans Hill, Stafford.
- 1909 \*Bennett, Charles Thomas, B.Sc. (Lond.). 27, Nightingale Lane, London, S.W. 12.
- 1919 Bennett, George Macdonald, B.A., B.Sc. (Lond.), 94. Mercers Road, Turnell Park, London, N. 19.
- 1910 Bennett, Reginald Robert, B.Sc. (Lond.). Barrister-at-Law, 22-30 Graham Street, City Road, London, N. 1.
- 1919 Benson, Richard Walters, Sunny Hill, Silcoates, nr. Wakefield.
- 1917 Bentz, Ernest, Westwoodside, Wilbraham Road, Manchester, S.W.
- 1916 Berry, Leslie Hamilton, B.Sc. (Lond.), Penshurst, 37. Croham Park Avenue, South Croydon, Surrey.
- 1900 Berry, Reginald Arthur, Agric. Dip. (Cautab.), The West of Scotland Agricultural College, 6, Blythswood Square, Glasgow.
- 1918 Best, Thomas Thompson, Ph.D. (Erlangen), Woodleigh, Laurel Road, St. Helens.
- 1893 Bevan, Edward John, 4. New Court, Lincoln's Inn, London, W.C. 2. [c. 1894-97, 98-1901, 02-05, 11-14: v.-p. 1905-08, 14-17; @, 1917.]
- 1888 \*Bevan, John Williams, Morriston Spelter Works, Morriston, R.S.O., Glam.
- 1878 \*Bickerdike, William Edward, Bryers Croft, Wilpshire, near Blackburn.
- 1888 Biggart, John William, 29, Catheart Street, Greenock.
- 1886 Billing, Henry Samuel, 42, Kingsley Road, Mutley, Plymouth.
- 1912 Birch, William Colet. B.A. (Cantab.). The Chemical Laboratory, P.O. Box 141, Nairobi, British East Africa. (Sapper, R.E.)
- 1906 Black, Walter Geoffrey, A.C.G.I., c/o Messrs. George Yaxley, Norwich, Ltd., Wholesale and Export Boot and Shoe Manufacturers, Heigham Street, Norwich.

- 1919 Blackshaw, George Neville, O.B.E., B.Sc. (Wales), Government Laboratory, Department of Agriculture, Salisbury, Rhodesia. (Captain, Chemical Adviser.)
- 1909 Blair, Robert Westrup, A.R.C.S.I., Institute for Medical Research, Kuala Lumpur, Federated Malay States. (Captain, Assistant Chemical Adviser.)
- 1892 Blake, Robert Frederick, Analytical Laboratory, Scottish Provident Buildings, Belfast. [c. 1914-17.]
- 1919 Bliss, Henry James Wheeler, B.A. (Oxon.), M.A. (Columbia), Bond Place Chambers, Leeds. (Major, A.S.C.)
- 1901 Bloch, Olaf Frederick Charret, 44, Finsbury Square, London, E.C. 2.
- 1895 Bloomer, Frederick John, Penpont, Clydach, Glam.
- 1891 Blount, Bertram, 76 and 78, York Street, Westminster, London, S.W. 1. [c. 1903-06, 11-14; e. 1907-11.]
- 1891 \*Bloxam, Arthur George, 30, Southampton Buildings. Chancery Lane London, W.C. 2. [c. 1912-15.]
- 1909 Bloxam, Hugh Charles Loudon, Laboratorio Quimico de los Arsenales de la Marina, Valparaiso, Chili.
- 1887 Blunt, Thomas Porter, M.A. (Oxon.), Wyle Cop, Shrewsbury.
- Blyth, Alexander Wynter, M.R.C.S. (Eng.), L.S.A. (Lond.), Barristerat-Law (Lincoln's Inn), 3, Upper Gloucester Place, Marylebone Road, London, N.W. 1. [c. 1892-93, 96-99.]
- 1899 Blyth, Meredith Wynter, B.A. (Cantab.), B.Sc. (Lond.), Lacton House, Tanbersley, near Barnsley.
- 1887 Bodmer, Richard, 16, Southwark Street, London, S.E. 1.
- 1918 Bolam, Herbert William, B.Sc. (Edin.), Ph.D. (Leipzig). Queen Margaret College, The University, Glasgow.
- 1887 Bolas, Thomas, 60, Grove Park Terrace, Chiswick, London, W. 4.
- 1897 Bolt, Frederick John, 6, Finsbury Square, London, E.C. 2.
- 1916 Bolton, Edward Richards, 46, Stamford Brook Road, Hammersmith, London, W. 6.
- 1918 Bone, Professor William Arthur, D.Sc (Manc.), Ph.D. (Heid.), F.R.S., Montrose, Harpenden Road, St. Albans.
- 1916 Boon, Professor Alfred Archibald, D.Sc. (Edin.), Chemistry Department, Heriot-Watt College, Edinburgh.
- 1903 \*Booth, Norman Parr, Analytical Laboratory, Messrs. Cadbury Brothers, Limited, Bournville, near Birmingham.
- 1905 \*Borland, William Dalrymple, Beacon Lodge, Bean, Dartford, Kent.
- 1887 \*Bothamley, Charles Herbert, M.Sc. (Leeds), Weston-super-Mare.
- 1894 Bowes, Harry, 9, Park Road, Heaton Moor, Stockport; and 40, Radford Street, Blackley, Manchester.
- 1919 Bewis, William John, Ph.D. (Zurich). The Gables. Bridgford Road, West Bridgford, Notts.
- 1918 Bowles, Bertram Hennessey, Overdale, Eastwood Road, South Woodford, London, E. 18.

- 1898 Bowles, Horace Edgar, Laboratory and Assay Offices, Monument Chambers, King William Street, London, E.C. 4.
- 1918 Bowles, Percy Ewart, Ph.D. (Heid.), The International Paint and Compositions Co., Ltd., Felling-on-Tyne.
- 1917 Bowles, Thomas Henry, 43. Albion Road, Westeliff-on-Sea, Essex.
- 1888 \*Bowman, Frederick Hungerford, Assoc.M.Inst.C.E., D.Sc., 76, Acomb Street, Whitworth Park, Manchester.
- 1894 \*Boyce, Frank, 48, Duchy Road, Harrogate.
- 1918 Boyd, Alexander, John. No. S. Lancaster Court, Newman Street, Oxford Street, London, W. 1.
- 1904 Boyd, David Runciman, D.Sc. (Glas.), Ph.D. (Heid.), University College, Southampton.
- 1911 Boyd, James, A.R.T.C. (Glas.), P.O. Box 809, Johannesburg, Transvaal, South Africa.
- 1912 Boyd, Robert. B.Sc. (Glas.). co The British Columbia Sugar Refining Co., Ltd., Vancouver, B.C., Canada.
- 1918 Bracewell, Geoffrey Alfred, 17, Farcliffe Terrace, Bradford.
- 1916 Brady, Oscar Lisle, B.A. (Cape of Good Hope), D.Sc. (Lond.), D.I.C., University of London Club, 21, Gower Street, London, W.C. 1.

  [c. 1918-.]
- 1887 Braithwaite, Arthur, Oakwell, Eaglescliffe Junction, Yarm.
- 1918 Brame, Professor John Samuel Strafford, 3, Vanbrugh Fields, Blackheath, London, S.E. 3.
- 1918 Bramley, Arthur, D.Sc., A.R.C.S. (Lond.), Technical College, Loughborough.
- 1888 Branson, Frederick Woodward, Wynneholme, Far Headingley, Leeds.
- 1912 Brebner, John, M.A., B.Sc. (Aberdeen), c o Messrs, J. & J. Cunningham, Ltd., 44, Bernard Street, Leith.
- 1888 Brewis, Edward Theodore, 31, Belgrave Road, Leyton, Essex.
- 1914 Bridge, Stanley Wilkinson, B.Sc. (Lond.), c/o Messrs. Brandram Bros. & Co., Rotherhithe, London, S.E. 16. (Captain, Chemical Adviser.)
- 1887 Briggs. Thomas Lynton, 188, Central Avenue, Flushing, Borough of Queens, New York, U.S.A.
- 1919 Brightman, Rainald, M.Sc. (Lond.), co Messrs. Levinstein, Ltd., Blackley, Manchester.
- 1907 Brincker, John Augustus Herman, B.A., M.B., B.C., D.P.H. (Cantab.), B.A. (Cape of Good Hope), M.R.C.S. (Eng.), L.R.C.P. (Lond.), D.P.H. (R.C.P.S., Lond., 262, Gloucester Terrace, Porchester Square, London, W. 2.
- 1908 Brisbane, James William.
- 1918 Brislee, Francis Joseph. D.Sc. (Liv.), Holmfield, Church Road, Roby, Lancs.
- 1885 \*Broadbent, John James. 50, St. Mary's Road, Ponsonby, Auckland, N.Z.
- 1907 Brooker, James William George, 8, Chisholm Road, Croydon, Surrey.

- 1900 Brooks, Cecil Joslin, c'o J. S. Brooks, Esq., Drinkstone, Bury St. Edmunds, Suffolk.
- 1889 \*Brothers, Horace Edward, B.Sc. (Lond.), Clooney, Higher Knutsford Road, Latchford, Warrington.
- 1877 Brown, Professor Alexander Crum, M.A., M.D. (Edin.), D.Sc. (Lond.), Hon. LL.D. (Aberd. and St. Andrews), F.R.S., 8, Belgrave Crescent, Edinburgh. 7v.-p. 1877-80, 82-84, 89-92, 98-1901.
- 1905 \*Brown, Arthur Edgeome, B.Sc. (Lond.), Laboratory, Plough Court, 37, Lombard Street, London, E.C. 3.
- 1913 Brown, Bernard Meredith, B.Sc. (Lond.), 8, Farquharson Road, West Croydon, Surrey. (Captain, R.A.O.C.)
- 1887 Brown, David, J.P., Willowbrae House, Willowbrae Road, Piershill, Edinburgh.
- 1897 Brown, George Edward, c.o. The British Journal of Photography, 24, Wellington Street, Strand, London, W.C. 2.
- 1917 Brown, Harold Bush. 21, Ommaney Road, New Cross, London, S.E. 14.
- 1887 Brown, Henry, Messrs. Benskin's Watford Brewery, Ltd., Watford. Herts.
- 1892 Brown, Henry Charles, Yoxford House, King's Lynn, Norfolk.
- 1877 Brown, Horace Tabberer, Hon. LL.D. (Edin.), F.R.S., 52, Nevern Square, Kensington, London, S.W. 5. [c. 1888-91, 94-97, 1902-05.]
- 1908 Browne, Frank, 60, Fornham Road, Bury St. Edmunds, Suffolk.
- 1919 Browning, Kendall Colin, M.A. (Cantab.), 11. Barton Terrace, Dawlish, S. Devon.
- 1918 Brownsdon, Henry Winder, M.Sc. (Vict.), Ph.D. (Jena), 109, Oxford Road, Moseley, Birmingham.
- 1895 Brownsword, Frank, M.Sc. (Vict.). Bryn Derwen School, Old Colwyn, North Wales.
- 1901 \*Bruce, James, B.Sc. (Lond.), A.R.C.S. (Lond.), Ph.D. (Munich), The Technical College, Huddersfield.
- 1913 Bruce, Robert, 17, Craiglea Drive, Edinburgh. (Major, R.E.; M.C.)
- 1905 \*Brünnich, John Christian, The Department of Agriculture, Brisbane, Queensland, Australia.
- 1900 Buchanan, John, Post Office, Odzi, Rhodesia, South Africa.
- 1878 Buchanan, John Young, M.A. (Cantab., F.R.S., 26, Norfolk Street, Park Lane, London, W. 1.
- 1919 Bunker, Sidney Waterfield, B.Sc. (Lond.), 17, King Edward's Grove, Teddington, Middlesex. (Lieut-Colonel, R.E.; D.S.O., M.C., Cavalier of the Order of St. Maurice and St. Lazarus.)
- 1898 Burbridge, James Kerry, The Orchard. Philip Lanc, South Tottenham, London, N. 15.
- 1918 Burford, Samuel Francis, The Ridgeway, Rothley, near Leicester: and Corporation Buildings, Horsefair Street, Leicester.
- 1878 \*Burge, Sir Charles Henry, J.P., Iddesleigh, Crescent Road, Kingston Hill, Surrey.

## FELLOWS.

- 1889 \*Burgess, William Thomas, 20, Priory Road, Bedford Park, London, W. 4. [c. 1914-17; v. p. 1917-.]
- 1897 Burls, Frank Borrett, Laboratory, Custom House, London, E.C. 3.
- 1893 Burnham, John Charles, C.S.I., B.Sc. (Vict.), Superintendent, H.M. Factory, Gretna, Scotland.
- 1887 Burrell, Benjamin Arthur, S, Springfield Mount, Leeds.
- 1898 Butcher, Herbert Thomas, A.R.S.M., c/o Messrs. Macdonald, Gibbs & Co., Capel House, 54, New Broad Street, London, E.C. 2.
- 1918 Butler, Gerald Snowden, B.A. (Oxon.), Aruvankadu, Nilgiri Hills, S. India.
- 1918 Butler, Thomas Howard, Ph.D. (Jena), M.Sc. (Bris.), c o Messrs. Butler & Co. (Bristol), Ltd., Silverthorne Lane, St. Philip's, Bristol.
- 1896 Butterfield, William John Atkinson, M.A. (Oxon.), 66, Victoria Street, Westminster, London, S.W. 1. [c. 1909-1912.]
- 1907 Byles, Denison Beuzeville, B.Sc. (Lond.), Fernbrook, Wellington Road, Hampton Hill, Middlesex.
- 1901 Byrn, George Alexander, Reiby Lane. Circular Quay, Sydney, N.S.W. Australia.
- 1908 Byrom, Thomas Henry, 35, Christchurch Avenue, Brondesbury, London, N.W. 6.
- 1906 Bywaters, Hubert William, D.Sc. (Lond. and Bristol). Ph.D. (Wirzburg), A.R.C.S. (Lond.), 9, Henleaze Avenue, Bristol.

## С

- 1910 Cahen, Edward, A.R.C.S. (Lond.), Mandalay, Woodhouse Terrace, Falmouth, Cornwall.
- 1918 Cain, John Cannell, D.Sc. (Manc.), Ph.D. (Tübingen), 24, Aylestone Avenue, Brondesbury Park, London, N.W. 6.
- 1918 Caines, Charles March, 12, Sheldon Road, Cricklewood, London, N.W. 2.
- 1909 Caines, George Sidney Alfred, London County Council Chemical Department, 2, Savoy Hill, Strand, London, W.C. 2.
- 1908 Calam, Harold, B.Sc. (Vict.), M.Sc. (Leeds), 18, Melton Road, West Bridgford, Nottingham.
- 1917 Calder, William Alexander Skeen, 449, Hagley Road, Edgbaston, Birmingham.
- 1908 Caldwell, Kenneth Somerville, B.Sc. (Wales). Ph.D. (Leipzig), Bankipur. E.I.R., Bengal, India.
- 1916 Caldwell, Professor William, M.A. (R.U.I.), M.A., Sc.D. (T.C.D.), Royal College of Surgeons in Ireland, Stephen's Green, Dublin.
- 1902 Caldwell, William Alfred, 2, Herriet Street, Pollokshields, Glasgow.
- 1904 Calvert, Harry Thornton, B.Sc. (Vict.), D.Sc. (Leeds). Ph.D. (Leipzig), West Riding of Yorkshire Rivers Board, Wakefield.
- 1913 Cameron, Alec Munro, B.Sc. (Edin.), Chemical Laboratory, Beechleigh, Lasswade, Midlothian.
- 1918 Cameron, Alexander Thomas, M.A., B Sc. (Edin.), 59, Lancaster Gate, London, W. 2. (Captain R.A.M.C. (T.); mentioned in despatches.)

- 1878 Cameron, Sir Charles Alexander, C.B., Hon, M.D. (R.U.I.), D.P.H. (Cantab.), Hon, D.P.H. (R.C.S.I.), F.R.C.S.I., F.R.C.P.I., M.K. & Q.C.P.I., Hon, L.A.H. (Dub.), Chatham Row, Dublin. [v.-p. 1884-90.]
- 1878 Cameron, James, 46, Onslow Gardens, Muswell Hill, London, N. 10. [c. 1902-05.]
- 1878 \*Cammack, John, Fernsholme, Toll Bar, St. Helens, Lanes.
- 1918 Campbell, Andrew, The Coppice, Beckenham, Kent.
- 1918 Campbell, Arthur Fred, M.Sc. (Manc.), 9, Fort Road, Sedgley Park, Prestwich, Manchester.
- 1916 Campbell, Bertram, B.Sc. (Lond.), D.I.C., Glebelands, N. Farnborough, Hants.
- 1908 Campbell, John Alexander, co The British South African Explosives Co., Ltd., Modderfontein, Transvaal, South Africa.
- 1916 Campbell, Laurence Eversley, B.Sc. (Lond.), 5, St. Matthew's Avenue, Surbiton, Surrey. (Captain, R.A.O.C.)
- 1901 Campion, Professor Alfred, jun., Foundry Technical Institute, Falkirk.
- 1898 Candy, Hugh Charles Herbert, B.A., B Sc. (Lond.), 6, Gordon Square, London, W.C. 1. [c. 1916-19.]
- 1915 \*Cardwell, David, M.Sc. (Vict.), Dip. Chem. (Munich), 50, Alexandra Road, S., Manchester.
- 1913 Carey, William Gordon, 39, Tavistock Square, London, W.C. 1.
- 1918 Carlos, Arthur Sidney, B.Sc. (Lond.), 42. Foxley Road, N. Brixton, London, S.W. 9.
- 1917 Carmichael, John, 62, Norroy Road, Putney, London, S.W. 15.
- 1917 Carmichael, John Fisher, B.Sc. (Vict.), Tower Building, Liverpool.
- 1887 \*Carmody, Professor Patrick, Rose Hill, Lostwithiel, Cornwall.
- 1911 Carpenter, Percy Henry, Assistant Scientific Officer, Indian Tea Association, Experiment Station, Jorhat, Cinnamara P.O., Sibsagar, Assam.
- 1899 Carr, Francis Howard, Westhorpe, Ruddington, Notts. [c. 1909-12, 1919-.]
- 1907 Carter, Arthur Charles, Dilston, Mumbles, Glam. (Lieut., Welsh Regt).
- 1910 Carter, Richard John, M.A. (Oxon.), Royal Grammar School, Worcester.
- 1897 Carter, Walter Charles, co The Dominion Iron and Steel Co., Ltd., Sydney, Cape Breton, Nova Scotia.
- 1918 Cartwright. Thomas Turnel Frank. B.Sc., A.R.C.S. (Lond.), 6, Station Road, Stowmarket, Suffolk.
- 1912 Carty, Ronald Devereux, A.R.C.S.I., 40, Cole Park Road, Twickenham, Surrey.
- 1913 Case, Alfred Edwin, B.Sc. (Lond.). 71, Gillott Road, Edgbaston, Birmingham.
- 1901 Caspari, William Augustus, B.Sc. (Vict.), Ph.D. (Jena), co Messrs. Evans. Sons, Lescher & Webb. 60. Bartholomew Close. London, E.C. 1.

- 1884 \*Cassal, Colonel Charles Edward, V.D., Town Hall, Kensington, London, W. 8; 56, Oxford Gardens, Kensington, London, W. 8; and Westminster City Hall, Charing Cross Road, London, W.C. 2. [c. 1889-92, 93-96, 97-1900, 01-04, 05, 08, 09-12; (f., 1892-93.]
- 1911 Caulkin, Howard Alfred, B.Sc. (Lond.), The Glen, Cumber Hill, Duffield, Derbyshire.
- 1897 Caven, Robert Martin, D.Sc. (Lond.), The Technical College, Darlington.
- 1914 Caw, William, H.M. Factory, Gretna. Scotland. (Sergeant, R.E.)
- 1913 \*Challenger, Frederick, Ph.D. (Göttingen , B.Sc. (Lond.), The University, Edmund Street, Birmingham.
- 1910 Challinor, Richard Westman, Quidington, Emmerick Street, Leichhardt, New South Wales, Australia.
- 1898 Chambers, Thomas, Kiandra, Church Street, Waratah, Newcastle, New South Wales; and co Rev. J. Chambers, 110. West End Avenue, Harrogate.
- 1917 Chance, Kenneth Macomb, M.A. (Cantab.), British Cyanides Co., Ltd., 49, Queen Victoria Street, London, E.C. 4.
- 1908 Chaplin, Edward Mitchell, Ph. D. Würzburg, Public Analyst's Laboratory, Wakefield.
- 1893 Chapman, Alfred Chaston, Laboratory, 8, Duke Street, Aldgate, London, E.C. 3. [c. 1903-06, 09-11, 1918-; c. 1911-19.]
- 1902 Chapman, Arthur Jenner, Baronsmere, 63. Stanhope Avenue, Church End, Finchley, London, N. 3,
- 1917 Chapman, Charles Eustace, Dept. of Chemistry, Adelaide, S. Australia.
- 1904 Chapman, Edgar Marsh, Llyn Ogwen, 65. Scalby Road, Scarborough.
- 1893 Charles, Rhys Pendrill, King's College, Strand, London, W.C. 2. (Lieut.-Colonel, London Regiment.)
- 1899 \*Chattaway, Frederick Daniel, M.A. (Oxon.), D.Sc. (Lond.), Hon. B.Sc. (Birm.), Ph.D. (Munich), F.R.S., 151, Woodstock Road, Oxford. [c. 1900-3, 08-11; v.-p. 1903-05.]
- 1902 \*Cheshire, Horace Fabian, B.Sc. (Lond.), Public Analyst's Laboratory, Hastings, Sussex; and 47, Havelock Road, Hastings.
- 1898 Chilwell, John, c/o O. H. Sharrott, Esq., Solicitor, 5, Victoria Road, Tamworth; and Messrs. Murray's, Ltd., Highlander Condensed Milk Factory, Invercargill, N.Z.
- 1918 Christie, John, 5, Albert Road. Crosshill Road, Glasgow.
- 1918 Christie, John Hugh, B.Sc. (Lond.), co Dr. Bean, Crossgates, Leeds. (2nd Lieut., I.W.T.).
- 1887 Chrystal, William James, 7, West George Street, Glasgow.
- 1911 Chrystall, Edwin Rodney, B.Sc. (Lond.), c'o Messrs. Curtis's & Harvey, Ltd., Cliffe-at-Hoo, Rochester, Kent.
- 1913 Claremont, Claude Leopold Leszynski, B.Sc. (Lond.), c o Messrs. Timothy White & Co., Ltd., Chandos Street, Portsmouth. (Captain, King's Royal Rifle Corps.)

- 1904 Clark, Robert Macfarlane, B.Sc. Glas.), 138, Bath Street, Glasgow.
- 1902 Clark, William Bone, Larkfield, Earlestown, Lancs.
- 1905 Clarke, George, jun., Department of Land Records and Agriculture, Cawnpore, India.
- 1912 \*Clarke, Hans Thacher, D.Se. (Lond.), Kodak Park, Rochester, New York, U.S.A.
- 1907 Clarke, Reginald William Lane, B.Sc. (Lond.), Municipal Technical Institute, Coventry.
- 1907 \*Clarke, Robert William, Sanitary Commissioner's Office, Gibraltar,
- 1918 Clarke, Miss Rosalind, B.A. (R.U.I.), D.Sc., (N.U.I.), Ardgriana, Galway.
- 1902 Clayton, George Christopher, C.B.E., Ph.D. (Heidelberg), Croughton, near Chester.
- 1911 Clement, Leonard, M.A. (Cantab. v. c o Shell Marketing Co., Ltd., Shell Haven, nr. Stanford-le-Hope, Essex. (Sergeant, R.E.)
- 1878 Clowes, Professor Frank. D.Sc. (Lond.), The Grange, College Road, Dulwich, London, S.E. 21. c. 1888 91, 92-95, 97-1900; v.-p. 1900-03, 10-13; @. 1913-14.]
- 1915\_\*Coates, Mrs. Ada Maria, M.Sc. (Birm.), 12, Carisbrooke Road, Edgbaston, Birmingham.
- 1917 \*Coates, Joseph Edward, O.B.E., D.Sc. (Birm.). The University, Birmingham; and 12, Carisbrooke Road, Edgbaston, Birmingham. (Lieut.-Commander, R.N.V.R.) [e. 1919-.]
- 1913 Cobb, Professor John William, C.B.E., B.Sc. (Lond. and Leeds), The University, Leeds; and Town End, Wootley, Leeds.
- 1917 Cockburn, John Alexander, Ardeer Factory, Stevenston, Avrshire.
- 1909 Cockburn, Thomas, 11. Grantly Gardens, Shawlands, Glasgow.
- 1918 Cocking, Thomas Tusting, c'o The British Drug Houses, Ltd., 22 -30, Graham Street, City Road, London, N, 1.
- 1887 Coleman, Joseph Bernard, A.R.C.S.I., South Western Polytechnic, Chelsea, London, S.W. 3.
- 1918 \*Coleman, Walter Henry, 1, Athole Gardens, Newlands, Glasgow,
- 1918 Colgate, Reginald Thomas, D.Sc. (Lond.), A.C.G.L. D.I.C., 25, Denmark Road, Reading.
- 1917 Collens, Archibald Edgar, The Government Laboratory, Antigua, B.W.I.
- 1913 Collett, Ronald Leslie, M.A. (Cantab.), 12, Riverview Gardens, Barnes, Surrey. (Captain, R.A.M.C.)
- 1919 Colley, Alfred, Fairfield, Albert Road, Wolverhampton.
- 1897 Collie, Professor John Norman, Ph.D. (Würzburg), Hon. LL.D. (Glas.), F.R.S., University College, Gower Street, London, W.C. 1. [c. 1905-08; e. 1912-13.]
- 1901 Collingridge, Frank, B.Sc. (Lond.), Highstone, New Road, Llanelly, Carmarthenshire.
- 1917 Collins, Cecil George, 67, Wickham Road, Brockley, London, S.E. 4. (Corporal, R.E.)

- 1908 Collins, Stanley Winter, B.Sc. (Lond.), 33. Oakhill Court. East Putney, London, S.W. 15.
- 1891 \*Collins, Sydney Hoare, M.Sc. (Dun.), 9, Cavendish Place. Newcastle-on-Tyne.
- 1902 \*Collis, Walter Thomas, Parkhurst, St. Peter's Road, Harborne, Birmingham.
- 1918 Collitt, Bernard, 15, Massey Road, Lincoln.
- 1904 \*Colman, Harold Govett, Ph.D. (Würzburg), M.Sc. (Vict.), 1, Arundel Street, Strand, London, W.C. 2. [c. 1908-1911 : e. 1915-.]
- 1892 Colwell, James Kear, Finsbury Town Hall, Rosebery Avenue, London. E.C. 1. [c. 1900-03, 04-07.]
- 1904 Comber, Albert Walter, The Middlesex Chemical Co., Ltd., Langbourne Wharf, 304, West Ferry Road, Millwall, London, E. 14.
- 1911 Connah, Frank Edwin, Government Chemical Laboratory, Brisbane.
  Queensland, Australia.
- 1894 Connah, James, B.Sc. (Lond.), Custom House, London, E.C. 3; and 31, Woodstock Road, Bedford Park, London, W. 4. c. 1910-13.
- 1902 Conroy, James Terence, B.Sc. (Lond.), Ph.D. (Göttingen), 9. The Serpentine, Grassendale, Liverpool.
- 1916 Conyers. Fred Gofton. The Bradford Wool Extracting Co., Ltd., Pit Lane Mills. Bradford.
- 1888 \*Cook, Ernest Henry, D.Sc. (Lond.), Clifton Laboratory, 27, Berkeley Square, Bristol.
- 1898 \*Cooksey, Thomas, B.Sc. (Lond.), Ph.D. (Marburg), Board of Health Office, Macquarie Street, Sydney, N.S.W.
- 1897 Cooper, Arthur James. B.Sc. (Lond.), M.A., LL.D. (Dub.), Solihull School, Solihull, Birmingham.
- 1918 \*Cooper, Walter Johnson. The Elms, Lavernock, nr. Penarth, S. Wales.
- 1901 \*Coppock, John Bridgeford, B.Sc. (Lond.), 34, Lee Lane, Horsforth, Leeds.
- 1919 \*Corfield, Charles Edwin. 17. Bloomsbury Square. London. W.C. 1.
- 1896 \*Coste. John Henry. Utopia, Gloucester Road, Teddington; and London County Council Chemical Department, 2, Savoy Hill, Strand, London, W.C. 2. [e. 1908-1911.]
- 1901 Cotterill, John William, Keble Lodge, Streetly, Sutton Coldfield.
- 1917 Cottrell, Allin, M.Sc. (Manc.), No. 3 Staff Hostel, Eastriggs. Dumfriesshire.
- 1911 Cowap, John Chester. B.Sc. (Vict.), The Government Analyst's Department, Penang, Straits Settlements.
- 1917 Coward, Hubert Frank, D.Sc. (Manc.), c o Tootal Broadhurst Lee Co.. 56, Oxford Street, Manchester.
- 1918 Cowman, Douglas Henry Bellars, B.Sc., 2, Allison Gardens, Dulwich Common, London, S.E. 21.
- 1919 Cox, Henry Edward, B.Sc. (Lond.), 44, Bassaley Road, Newport, Mon.
- 1910 Coysh, Basil Radeliffe, Brooklyn, Hants Co., Nova Scotia.

### FELLOWS.

- 1916 Crabtree, James, M.Sc. (Vict.), Woburn Experimental Farm. Aspley Guise, S.O., Beds.
- 1916 Crabtree, John Ickeringill, M.Sc. (Vict.), Research Laboratory, The Eastman-Kodak Co., Kodak Park, Rochester, New York, U.S.A.
- 1898 \*Craig, George, 95, Bath Street, Glasgow.
- 1917 Craig, Robert James, B.Sc. (Melbourne), c.o Chief Inspector of Explosives, Flinders Lane, Melbourne, Victoria, Australia.
- 1918 Crawford, John, 76. Forsyth Street, Greenock. (Argyll and Sutherland Highlanders.)
- 1888 Cribb. Cecil Howard, B.Sc. [Lond.], 60, Greek Street, Soho, London-W. 1. [c. 1900-03, 06-7, 13-; e. 1907-11, 16; 17-.]
- 1909 Crichton, David Cowan, M.A., B.Sc. (St. Andrews), Airybank, Cousland-Dalkeith.
- 1880 \*Criper, William Risdon, A.R.S.M., Konnagar, Calcutta, India.
- 1888 Cripps, Richard Augustus, The Laboratory, D'Avigdor Road, Hove, Sussex.
- 1919 Croad, Robin Bruce, The Coppice, Abbey Road, Rhos-on-Sea, Colwyn Bay.
- 1919 Crocker, James Codrington, M.A. (Cantab.), D.Sc. (Lond.), 11, Lavengre Road, W. Norwood, London, S.E. 27.
- 1898 Cross, Charles Frederick, B Sc. (Lond.), F.R.S., 4, New Court, Lincoln's Inn, London, W.C. 2. [c. 1914-17; v. p. 1917-.]
- 1899 \*Crossley, Professor Arthur William, C.M.G., D.Sc. (Vict.), Ph.D. Würzburg), F.R.S., Chemical Department, King's College, London, W.C. 2. (Lieut.-Colonel, Staff; mentioned for services.) [c. 1909-10; e. 1912-.]
- 1902 Crossley, Watson, A.R.C.S.I., 2, St. Dunstan's Hill, Gt. Tower Street, London, E.C. 3.
- 1888 \*Crowther, Horace Woodward, Beeches Road, West Bromwich.
- 1918 Cruikshanks, George Shevas, Ph.D. (Leipzig), 16, Grantly Gardens, Shawlands, Glasgow.
- 1917 \*Cumming, Alexander Charles, O.B.E., D.Sc. (Melbourne), 2, Relugas Road, Edinburgh. [c. 1919-.]
- 1916 Cunningham, Alexander, Loganlea, Chryston, Glasgow. (Scottish Rifles.)
- 1911 Cunningham, George Alexander Main, Glenview, Calder Road, Mossend, Glasgow.
- 1887 Curphey, William Salvador, 87. Canfield Gardens, South Hampstead. London, N.W. 6. [c. 1911-14.]

# D

- 1893 \*Dains, Herbert Henry, Marnock, 7. Mount View Road. Crouch Hill. London, N. 4.
- 1904 \*Dakin, Henry Drysdale, B.Sc. (Vict.), Hon. D Sc. (Yale), D.Sc. (Leeds), F.R S., 819, Madison Avenue, New York City, U.S.A.
- 1910 \*Dale, Hugh Gordon, St. Ives, Fitzjohn Avenue, Barnet, Herts.
- 1908 Darling, Charles Robert, A.R.C.S.I., 186, Eglington Road, Plumstead, London, S.E. 18.

- 1878 \*Darling, William Howarth, 49, Oxford Road, Altrincham, Cheshire.
- 1901 \*Darnell-Smith, George Percy, B.Sc. (Lond.), Department of Agriculture (N.S.W.), Biological Branch, Mining Museum, George Street, North, Sydney, New South Wales.
- 1904 \*Davidson, Alexander, Whitecastle, Biggar. Lanarkshire. (Lieut., R.A.O.C.)
- 1916 Davidson, Alexander Linton, The Retreat, Stapenhill, Burton-on-Trent. (Gordon Highlanders.)
- 1882 Davidson, James, County Laboratory, Public Health Offices, County Buildings, Dumfries.
- 1918 \*Davidson, John Howard, M.Sc. (Manc.), 71, Marlborough Road, Sheffield.
- 1888 Davidson, Robert, co Messrs. Dalgety & Co., Ltd., 5, Bent Street, Sydney, N.S.W., Australia.
- 1900 \*Davidson, William Brown, M.A., D.Sc. (Aberd.), Ph.D. (Würzburg), Hollinhurst, Kaffir Road, Edgerton, Huddersfield.
- 1914 Davies, Harold, 57, Oakhill Road, Putney, London, S.W. 15.
- 1894 Davies, Herbert Edward, M.A. (Cantab.), B.Sc. (Lond.), Laboratory, Chapel Chambers South, 28, Chapel Street, Liverpool.
- 1897 \*Davies, Percy Marr, A.R.C.S.I.
- 1919 Davies, Samuel Henry, M.Sc. (Vict.), Ryecroft, New Earswick, York.
- 1903 Davis, Bernard Furley, 3, Vernon Chambers. Southampton Row, London, W.C. 1.
- 1915 Davis, Eric Gordon, B.Sc. (Lond.). Holmbury, Streatham Road, Mitcham, Surrey.
- 1907 Davis, Oliver Charles Minty, D.Sc., M.B., Ch.B. (Bristol), D.Sc. (Lond.), The University, Bristol. (Captain, R.A.M.C.)
- 1914 Davis, William Charles, c/o The British Cyanides Co., Ltd., Pope's Lane, Oldbury, Worcestershire.
- 1911 Davson, Archibald Prideaux, A.R.C.S. (Lond.), 16, Airedale Road, Ealing, London, W. 5.
- 1898 Daw, Frederick Weldon, A.R.C.S. (Lond.), Hillside, Newtown, Ebbw Vale, Mon.
- 1919 Dawson, Daniel Sutherland, B.Sc. (Aberd.), 12, Oakville Terrace, Leith. (R.E.)
- 1919 Dawson, William Haywood, Riverston, Wrottesley Road, Woolwich, London, S.E. 18.
- 1917 Deacon, Edgar Reginald, M.B.E., 36, Shooter's Hill Gardens, Eltham, London, S.E. 9.
- 1907 \*Deane, Harold, B.Sc. (Lond.), c/o Messrs. Stafford Allen & Sons, Ltd., Long Melford. Suffolk.
- 1880 \*Deering, William Henry, I.S.O., Glanmire, Bronshill Road, Torquay, Devon.
- 1902 \*Denham, William Smith, D.Sc. (St. Andrews), B.Sc. (Lond.), 38, Priory Road, Bedford Park, London, W. 4.
- 1918 Denington, Richard Charles, 69, Dover Road, Wanstead Park, London, E 12.

- 1904 \*Denney, Edwin James, A.C.G.I., The White House, North Walshum Norfolk, (Lieut., R.A.O.C.)
- 1895 \*Dent, Frankland, M.Sc. (Vict. and Leeds), Ph.D. (Munich), Government
  Analyst's Laboratory, Singapore, Straits Settlements.
- 1898 Desch, Professor Cecil Henry, Ph.D. (Würzberg), D.Sc. (Lond.), Reyal Technical College, Glasgow, [6, 1915-.]
- 1909 Desch, Mrs. Elison Ann, 3, Kelvinside Terrace North, Glasgow.
- 1902 Dewar, Alexander Hugh, c'o The Linoleum Manufacturing Co., I.td., Staines, Middlesex.
- 1878 \*Dewar, Professor Sir James, M.A. (Cantab.), Hon. D.Sc. (Oxon., Dub., Vict., and R.U.I.), Hon. LL.D. (St. Andrews, Aberd., Edin., and Glas.), F.R.S., The Royal Institution, Albemarle Street, London, W. 1; and 1, Scroope Terrace, Cambridge.
- 1904 Dewhirst, John Arthur, Borough Laboratory, Imperial Chambers, George Square, Halifax.
- 1917 Dey, Biman Bihari, D.Sc. (Lond.), Presidency College, Calcutta, India.
- 1919 Dhar, Professor Nil Ratan, M.Se. (Calcutta), D.Se. (Lond.), D. és Se. (Paris), Muir Central College, Allahabad, India.
- 1880 \*Dibdin, William Joseph, 31, Idmiston Road, West Norwood, London, S.E. 27. [c. 1894-7, 1900-03.]
- 1918 Dick, James, jun., 71, West Cumberland Street, Glasgow.
- 1904 Dick. William Douglas, c'o Messrs. Hugh Baird & Sons. Ltd., 29, St. Vincent Place, Glasgow. (Captain, R.A.M.C.)
- 1907 Dickinson, Cyril, B.Sc. (Vict. and Leeds), Public Analyst's Dept., Town Hall, Walworth Road, London, S.E. 17. [c. 1911–14.]
- 1911 Dickinson, Colonel William Henry, M.B., Ch.B. (Edin.) (Indian Medical Service), Chemical Analyser to Government, The Laboratory, Bombay, No. 8, India.
- 1913 \*Dickson, William, 102, Argyle Road, Saltcoats, Ayr.
- 1896 Dixon, Andrew James, Chemical and Assay Laboratory, Reiby Lane, Circular Quay, Sydney, N.S.W., Australia.
- 1897 \*Dobbie, Sir James Johnston, M.A., Hon, L.L.D. (Glas.), D.Sc. (Edin.), F.R.S., Government Laboratory, Clement's Inn Passage, Strand, London, W.C. 2. [c. 1903-06, 10-13; v.-p. 1914-15, 18-; p. 1915-18; T. 1915-.]
- 1895 Dobbin, Leonard, Ph.D. (Würzburg), Chemical Laboratory, The University, Edinburgh.
- 1913 Dodd, Alexander Scott, B.Sc. (Edin.), 20, Stafford Street, Edinburgh.
- 1898 \*Dodd, Frederick Robertson, Welbank Villas, Liverpool Road, Aughton. Lancs.
- 1899 Doherty, William Michael, Second Government Analyst, The Government Laboratory, Health Department, Macquarie Street, Sydney, N.S.W., Australia.
- 1903 Don, John. M.A. (Aberd.), B.Sc. (Lond.) Gardenrose, Maybole, Ayr.
- 1900 \*Donald, James Wallace, Kekahai, Kanai, Hawaii.
- 1888 Donald, Samuel, Tar Distillation Works, Carolina Port, Dundee.

Date of

- 1914 Donnan. Professor Frederick George, M.A. (Q.U.B.), Ph.D. (Leipzig), F.R.S., University College, Gower Street, London, W.C. 1. [e. 1915 19; c. 1918 ]
- 1901 \*Dootson, Frederick William, M.A. (Cantab.', D.Sc. (Dub.), Trinity Hall, Cambridge.
- 1919 Dorée, Charles, M.A. (Oxon.), D.Sc. (Lond.), 103, Borough Road, London, S.E. 1.
- 1887 Dott, David Brown, Ravenslea, Musselburgh.
- 1878 \*Dougall, Samuel Shirra, Chemical Laboratory and Assay Office, Green's Chambers, 747, Hay Street, Perth, Western Australia.
- 1.913 Douglas, John Robert, A.R.C.S.I., 70. Ardrossan Road, Saltcoats, Ayrshire.
- 1-32 \*Douglas, William, Grafton House, Berkhamsted, Herts.
- 1892 Dreaper, William Porter, H.M. Factory, Sutton Oak, St. Helens, Lancs. [c. 1911-14.]
- 1916 Drinkwater, Basil Walter, B.Sc., A.R.S.M., A.R.C.S. (Lond.). 66, Albert Palace Mansions, Battersea Park, London, S.W. 11.
- 1901 Drinkwater, Thomas William, L.R.C.P., L.R.C.S. (Edin.), Chemical Laboratory, Surgeons' Hall, Edinburgh.
- 1915 Duff, James Cooper, M.Sc. (Manc.), 19, Cobcroft Road, Fartown. Huddersfield.
- 1888 \*Duggan, Thomas Richard, 52, East 41st Street, New York City, N.Y., U.S.A.
- 1894 Duncan, Cecil Cooke, Shirehall, Worcester. (Captain, R.A.O.C.)
- 1918 Duncan, James Bothwell, B.Sc. (Dun.), 50, Hotspur Street, Tynemouth.
- 1913 Duncan, John Gibson, 67, Waverley Gardens, Crossmyloof, Glasgow.
- 1894 Duncan, William. The Laboratory, 65, Bath Row, Birmingham.
- 1901 \*Dunn, John Thomas, D.Sc. Dun.), 10, Dean Street. Newcastle-on-Tyne.
- 1918 Dunstan, Albert Ernest, D.Sc. (Lond.). Meadhurst, Sunbury-on-Thames.
- 1894 Dunstan, Malcolm James Rowley, O.B.E., M.A. (Oxon.), South-Eastern Agricultural College, Wye, Kent.
- 1887 Dunstan, Professor Wyndham Rowland, C.M.G., Hon, M.A. (Oxon.), Hon, LL.D. Aberd., F.R.S., Imperial Institute, South Kensington, London, S.W. 7. [c. 1889-92; e. 1892-96.]
- 1908 Dupré, Louis William, 4, Canton Road, Shanghai.
- 1908 Dupré, Percy Vivian, A.C.G.I., 2, Edinburgh Mansions, Howick Place, London, S.W. 1.
- 1917 \*Durrans, Thomas Harold. M.Sc. (Lond.), 245. Woodstock Road. Oxford.
- 1914 Dyche-Teague, Francis Clifford, B.Sc. (Lond.), 258. Gloucester Terrace, Hyde Park, London, W. 2.
- 1880 \*Dyer, Bernard, D.Sc. (Lond.), 17, Great Tower Street, London, E.C. 3. [c 1889-92, 93-96, 97-99, 1903-06, 07-08; e. 1899-1903, 15-; v.-p. 1908-10: ₹. 1919-.]
- 1910 Dyke, Frederick Montague, B.Sc. (Lond.), Nelson Croft, 29, Church Road, Lower Bebington, Cheshire.

## FELLOWS.

# F

- 1916 \*Earl. John Campbell, Chemistry Dept., The University, St. Andrews, Scotland.
- 1898 Earp, Francis Salsbury, Ph.D. (Giessen), 35, Porter Street, Kalgoorlic, W. Australia.
- 1918 Eastaugh, Frederick Alldis, B.Sc. (Lond.), A.R.S.M., The University, Sydney, Australia.
- 1916 Eastburn, Gerald Jerome, Towerville, Helensburgh, Scotland. (2nd Lieut., M.M.G.)
- 1898 \*Easterfield, Thomas Hill, M.A. (Cantab.), Ph.D. (Würzburg), Victoria University College, Wellington, New Zealand.
- 1890 Eastes, Ernest John, 16, Highland Road, Upper Norwood, London, S.E. 19.
- 1910 Eaton, Bertie James, Office of Director of Agriculture. Kuala Lumpur, Selangor, Federated Malay States. (Captain, O.C. Malayan Volunteer Infantry.)
- 1918 Edgar, Edward Charles, D.Sc. (Vict.). British Dyes, Ltd.. Huddersfield. (2nd Lieut., T.F., attached M. of M.)
- 1903 Edmed, Frank George, O.B.E., A.R.C.S., B.Sc., Lond., Directorate of Chemical Inspection, Royal Arsenal, Woolwich, London, S.E. 18.
- 1916 Edon-Brown, Herbert, co Nitrogen Products and Carbide Co, Ltd., Dagenham Docks, Essex.
- 1888 Edwards, Harry Leaton, The Shanty, Great Meols, Cheshire.
- 1896 Edwards, Vincent, 29, Kingsway, Mortlake, London, S.W. 14.
- 1897 \*Edwards, Wilbraham Tollemache Arthur, M.R.A.C., Town Hall, Port Louis, Mauritius.
- 1919 Egerton, Alfred Charles Glyn, B.Sc. (Lond.), 29, Wilton Crescent, London, S.W. 1. (Captain, O.T.C.)
- 1914 Eldridge, Arthur Alfred. B.Sc. (Lond.), A.K.C., 63, Ellerton Road, Surbiton Hill, Surrey: and Royal College of Science. South Kensington, London, S.W. 7.
- 1914 Elkington, Harold Douglas, B.Sc. (Lond.), St. Aubyns, Woodborough Road, Putney, London, S.W. 15.
- 1917 Elliot, Thomas Gifford, Hillcote, Park Edge, Hathersage. via Sheffield.
- 1914 \*Elliott, Stanley. O.B.E., B.Sc. (Lond.), 40, Arundel Gardens, London, W. 11. (Major, General Staff.)
- 1888 Ellis, Charles James, Almorah Villa, Milngavie, near Glasgow.
- 1902 Ellis, Charles Sordes, The Authors' Club, 2. Whitehall Court, London, S.W. 1.
- 1893 \*Ellis, Er Victor, M.Sc. (Vict.), c<sub>j</sub>o McLellan, 31, Gayfield Square, Edinburgh.
- 1914 Ellis, Rowland Holliday, British Margarine Trade Supplies, Ltd., Morpeth Refinery, Canning Street, Birkenhead.
- 1888 Ellis, Professor William Hodgson, M.A. (Cantab.), M.B. (Toronto), Faculty of Applied Science and Engineering, The University, Toronto, Canada.

## FELLOWS.

- 1892 \*Ellwood, Thomas Asheroft, M.R.C.S. (Eng.), L.R.C.P. (Lond.), D.P.H. (Cantab.), 99, Tollington Park, London, N. 4.
- 1906 Elsden, Alfred Vincent, B.Sc. (Lond.), Chemical Department, Royal Arsenal, Woolwich, London, S.E. 18.
- 1915 Elsdon, George Davidson, B.Sc. (Birm.), Municipal Chemical Laboratory, 141, Regent Road, Salford.
- 1901 Embrey, George, City and County Laboratory, 47, Park Road, Gloucester. [c. 1915.]
- 1918 Emmett, William Gidley, M.A. (Cantab.), Broadgate, Beeston, Notts.
- 1919 Emsley, Sydney, B.Sc. (Vict.). Deane House, Prince's Avenue, Northwich, Cheshire.
- 1902 \*Entwistle, Albert Lucas, Royal Mint, Ottawa, Canada,
- 1878 Estcourt, Charles, Seymour House, 5, Seymour Grove, Old Trafford.

  Manchester.
- 1894 Estcourt, Philip Anderson, Seymour House, 5, Seymour Grove, O.d. Trafford, Manchester.
- 1905 Etheridge, Arthur Thomas, B.Sc. Lond., Research Department, Royal Arsenal, Woolwich, London, S.E. 18.
- 1915 Evans, Bernard Scott, B.Sc. (Lond.), 18, Keymer Road, Streatham Hill. London, S.W. 2. (Lieut., The Queen's; M.C.)
- 1915 Evans, Edgar Charles, B.Sc. (Wales), Rhondda Research Laboratories, Llwynypia, Rhondda, Glam.
- 1914 Evans, Edward Victor, M.B.E., c'o The South Metropolitan Gas (c.. 709, Old Kent Road, London, S.E. 15.
- 1914 Evans, Herbert John, B.Sc. (Wales), Kenyon Lane, Formby, near Liverpool. (Lieut., R.F.A.)
- 1905 Evans, John, 67, Surrey Street, Sheffield.
- 1918 Everest, Arthur Ernest, D.Sc. (Birm.), Ph.D. (Bile), Ainsworth Hall, Ainsworth, Bolton.
- 1913 Evers, Norman, Messrs. Allen & Hanbury's, Ltd., Bethnal Green, London, E. 2. (Lieut., R.A.M.C.)
- 1918 \*Ewan. Thomas. M.Sc. (Vict.), Ph.D. (Munich), 12, Kelvin Drive, Glasgow.
- 1903 Eynon, Lewis, B.Sc. (Lond.). 41, Champion Road, Upminster, Essex. (Lieut., R.E., seconded A.I.D.)

## F

- 1917 Fagan, Bernard Goulding, B.A., B.Sc. (N.U.I.), A.R.C.S.I., City Laboratory, Chatham Row, Dublin.
- 1918 Fagan, Thomas Wallace, M.A. (Cantab.), 13, George Square, Edinburgh.
- 1916 Farmer, Robert Crosbie, O.B.E., D.Sc. (Liv.), Ph.D. (Würzburg), 83, Kingsfield Road, Bushey, Herts.
- 1888 Farrington, Thomas, M.A. Q.U.I.), 4, Waterloo Place, Cork.
- 1877 \*Fenton, Henry John Horstman, M.A., Sc.D. (Cantab.) F.R.S., 19, Brookside, Cambridge. [c. 1906-09.]

- 1918 \*Ferguson, William Bates, K.C., M.A. (Oxon.), 48, Compayne Gard as, London, N.W. 6.
- 1913 Ferrey, Cuthbert Edmund Caulfield, 27. St James Road, Kingston-on-Thames. (Captain, R.A.M.C.; mentioned in despatches.)
- 1892 Field, Charles Henry, The Laboratory, U.K. Works, Gosterwood Street, Deptford, London, S.E. 8.
- 1908 \*Filmer, Reginald Mead, B.Sc. (Lond.), Royal Victoria Yard, Deptford, London, S.E. 8.
- 1913 Findlater, Richard Hamilton, c.o Brexburn Oil Co., Ltd., Broxburn, Scotland.
- 1911 Findlay, Professor Alexander, M.A. D Sc. Aberd. Ph.D. (Leipzig, University College of Wales, Aberystwyth. [e. 1911-15; c. 1915-18, 19-.]
- 1898 Findlay, Hugh, Meltham Mills, Meltham, near Huddersfield.
- 1913 Finlow, Robert Steel, B.Sc. (Wales). Fibre Expert, Government of Bengal, Dacca, Bengal, India.
- 1917 Finn, Cornelius Philip, B.Sc. (Leeds), Hemsworth Coke Ovens, Byproducts and Chemical Plants, Fitzwilliam, nr. Wakefield.
- 1906 Finnemore, Horace, B.Sc., Lond., 33. The Waldrons, Croydon, Surrey. (Captain R.E.)
- 1915 Finney, Ada Maria, M.Sc. (Birm.), see Coates.
- 1892 Firby, Alfred Wood, 14, Harp Lane, London, E.C. 3.
- 1888 \*Fisher, Walter William, M.A. Oxona, 5, St. Margaret's Road, Oxford, [c, 1893-96, 98-1901, 07-10; e, 1903-07.]
- 1918 Fitch, Arthur James, 20, Empress Road, Derby.
- 1888 Fitz-Brown, George, A.R.S.M., Ditton Copper Works, Widnes.
- 1918 Fleek, Mexander, D.Sc. (Glas.), 26, Manor House Road, Jesmond, Newcastle-on-Tyne.
- 1892 Fletcher, Dugald George, Farm Cottage, Little Aiden, Kilereggan, Dumbartonshire,
- 1912 Fletcher, Matthew Cunningham. Gunner. Canadian Field Artillery.)
- 1919 Flint, John Walter, B.A. Cantab., 2, Wellington Road, Maidstone. Kent.
- 1905 Floris, Robert Brooke, Metropolitan Water Board, 20, Nottingham Place, London, W. 1.
- 1918 Ford, John Simpson, 7, Corrennie Drive, Edinburgh.
- 1910 Foreman, Frederick William, M.A. (Cantab.), The Department of Agriculture, The University, Cambridge; and Gonville and Caius College, Cambridge.
- 1902 Forster, Ferdinand Edward Paul, do Messrs, Bass, Rateliff & Gretton, Ltd., 19, Guild Street, Burton-on-Trent.
- 1898 \*Forster, Martin Onslow, D.Sc. (Lond.), Ph.D. (Wurzburg), F.R.S., Queen Anne's Mansions, St. James's Park, London, S.W. 1. [c. 1905-08, 12-15; v.-p. 1908-11, 15-18; C. 1918-19.]
- 1919 Forster, Robert Benjamin, A.R.C.S.I., Ph.D. (Berlin), D.Sc. (N.U.I.), Glenside, Prestwich, Manchester.
- 1900 Foster, John Alfred, East Riding of Yorkshire County Analyst's Offices, Chapel Lane, Hull. (Captain, East Yorks, Regt.) [c. 1910-13]

## FELLOWS.

- 1897 \*Fowler, Gilbert John, D.Sc. Vict.\, Indian Institute of Science, Hebbal, Bangalore, India. [e. 1910-14; c. 1914-16.]
- 1916 Fox, John Jacob, M.B.E., D.Sc. (Lond.), Government Laboratory, Clement's Inn Passage, London, W.C. 2.
- 1907 Francis, Arthur Gordon, B.Sc. (Lond.), Government Laboratory, Clement's Inn Passage, London, W.C. 2.
- 1906 Francis, Professor Francis Ernest, Ph.D. (Erlangen), D.Sc. (Vict.). Chemical Department, The University, Bristol.
- 1911 Frank, George Herbert, M.Sc. (Leeds, Queen Hotel, Huddersfield.
- 1888 Frankland, Henry, Streonshalh, Linthorpe, Middlesbrough.
- 1884 \*Frankland, Professor Percy Faraday, Hon, LL.D. (St. Andrews), Ph.D. (Würzburg), B.Sc. (Lond.). Hon, M.Sc. (Birm.), A.R.S.M., F.R.S., The Dell, Northfield, Birmingham. c. 1888-91, 96-98, 1900-03; e. 1896-1900; v.-p. 1903-06, 09-12; P. 1906-09: £. 1906-.]
- 1908 Franklin, Arthur Cawte. The University, Hong Kong.
- 1908 Fraser, James Dick, 5. Millbrae Crescent, Langside, Glasgow.
- 1917 Frazer, Donald Richard, The Hague, Dumbreck, Glasgow. (Captain, M.G.C.)
- 1913 Freak, Gilbert Arthur. B.Sc. (Lond.). Wellcome Tropical Research Laboratories, Khartum, Soudan.
- 1893 \*French, William, M.A. (Cantab.), Heron Chemical and Colour Works, Lancaster.
- 1915 Friend, John Albert Newton, D.Sc. (Birm.), Ph.D. (Wiirzburg). Victoria Institute Science and Technical Schools, Sansome Walk, Worcester. (Captain, R.E.)
- 1910 Frye, Colin Charlwood, 18. Woodfield Road, Ealing, London, W. 5. (Major, R.A.M.C.)
- 1888 \*Fryer. Alfred Cooper, Ph.D., M.A. (Leipzig), 13. Eaton Crescent, Clifton, Bristol.
- 1918 \*Fryer, Percival John, Ravenscar, Tonbridge, Kent.
- 1904 Fyffe, William Alexander, Public Analyst's Laboratory, Stanley Mount, Douglas, Isle of Man.
- 1902 Fyleman, Martin Ernest, B.Sc. (Lond.), Ph.D. (Bâle), Kilmorna. Egmont Road, Sutton, Surrey.

# G

- 1888 Gadd, William Lawrence, V.D., 7, Lansdowne Square, Rosherville, Kent. (Lieut.-Colonel, R.G.A.)
- 1905 Gall, John Beaconsfield, A.C.G.I., "Hasli Thal," 49, Glenlyon Road, Eltham Park, Kent.
- 1895 Gardner, John Addymau, M.A. (Oxon.), St. George's Hospital, Hyde Park Corner, London, S.W. 7.
- 1913 Gardner, Professor Walter Myers, M.Sc. (Leeds), Technical College, Bradford; and 3, Fairmount, Bradford.

- 1918 Garland, Arthur Edward, B.Sc., A.R.C.S. (Lind.), Chemical Department, Royal Arsenal, Woolwich, London, S.E. 18.
- 1905 Garle, John Longsdon, 136, Holland Road, Kensington, London, W. 14. (Lieut., R.N.V.R.)
- 1918 Garrett, Frederic Charles, O.B.E., D.Sc. (Dun.), M.Sc. (Vict.), 27, Fern Avenue, Newcastle-on-Tyne. (Lieut.-Colonel.)
- 1913 Garrett-Smith, Noel, Heathside, Treville Street, Roehampton, London, S.W. 15. (Lieut., Lancashire Fusiliers.)
- 1912 Garsed, William, Lindenhurst, Gresham Road, Staines, Middlesex,
- 1909 Garton, Sir Richard Charles, G.B.E., Lythe Hill, Haslemere, Surrey.

  [c. 1912-15.]
- 1878 Gatehouse, James Wright, 36, Broad Street, Bath.
- 1909 Gates, Charles Gordon. B.Sc. (Lond.), 2, Cranbrook Road, Redland. Bristol,
- 1918 Gaul. Ernest George, M.Sc. (Manc.), The Chemical Department, The University, Manchester.
- 1912 Gawler, Robert, M.Sc. (Vict.), 76, Royal Park Avenue, Leeds.
- 1914 Gazdar, Miss Maud, B.Sc. (Lond.), Fox Hall, Upminster, Essex,
- 1888 Gemmell, George Harrison, The Chemical Laboratory, 4, Lindsay Place, Edinburgh,
- 1809 George, George, Director, Technical College, Auckland, New Zealand.
- 1892 Gerrans, Benjamin Henry, 57, Cricklade Avenue, Streatham Hill, London, S.W. 2.
- 1917-\*Gibson, Charles Stanley, M.A. Cantab.), B.Sc. (Oxon.), M.Sc.Tech. (Manc.), Chemical Laboratory, The University, Cambridge.
- 1899 Gilbard, John Francis Hutchins, 245, Dalston Lane, Hackney, London, E. 8.
- 1890 \*Giles, William Brantingham, The Grange, Levton, Essex.
- 1915 \*Gill, Harold Warren, B.Sc. (Lond.), Chief Resident Chemist, Magadi Soda Co., Magadi, British East Africa. (South African Mounted Rifles.)
- 1902 Gilles, William Setten, A.C.G.I., The Cottage, Bocking, Braintree, Essex.
- 1917 \*Gilling, Charles, B.Sc. (Lond.), 9, Alwyne Mansions, Wimbledon, London, S.W. 19.
- 1909 Gimingham. Conrad Theodore. University of Bristol Agricultural Research Station, Long Ashton, near Bristol; and Croyland, 144, Clapton Common, London, E. 5. (Captain, R.E.)
- 1900 \*Glass, Thomas Waterworth. B.Sc. (Lond.), 4, Western Gardens, Ealing, London, W. 5.
- 1917 Glendinning, Tom Aldrich, Technical College, Wellington, New Zealand.
- 1910 Godden, William, B.Sc., A.R.C.S. (Lond.), The University, Leeds.
- 1899 Golding, John. University College. Reading. (Captain, R.A.M.C. (T.): D.S.O., twice mentioned in despatches.)
- 1913 Goldsbrough, Harold Albert, 57, Chancery Lane, London, W.C. 2. (Captain, R.E.)

- 1917 Goldsmith, John Naish, M.Sc. (Manc.) Ph.D. (Heid.), 67. Chancery Lane, London, W.C. 2.
- 1914 \*Goodban, Leonard, 43, Addison Gardens, Kensington, London, W. 14-(Lieut., Middlesex Regt.).
- 1908 Goodson, John Augustus, Wellcome Chemical Research Laboratory, 6, King Street, Snow Hill, London, E.C. 1.
- 1908 Goodwin, Henry Ward, co Messrs, Charles Case & Son, Leigh Works, Westbury, Wilts.
- 1907 Goodwin, Professor Leo Frank, Ph.D. (Heid.), A.C.G.I., Queen's University, Kingston. Ontario. (Major, Canadian Expeditionary Force.)
- 1878 Gordon, Joseph Gordon, Athenæum Club, Pall Mall, London, S.W. 1.
- 1902 \*Goulding, Ernest, D.Sc. (Lond.), SS, Sylvan Avenue, Chitt's Hill, London, N. 22.
- 1888 \*Gowland, Professor William, A.R.S.M., F.R.S., 13, Russell Road, Kensington, London, W. 14; and Royal College of Science, South Kensington, London, S.W. 7. [c. 1897-99, 1905-08.]
- 1913 Grace. Claude Saville. B.Sc. (Lond.), 36, Harvard Road, Gunnersbury, London, W. 4.
- 1908 Gracey, David Allan, Government Laboratory. Clement's Inn Passage. London, W.C. 2.
- 1882 \*Graham, Christopher Colborne, M.B.E., Oriel House, Scarborough.
- 1897 Granger, James Darnell, Ph.D. (Berlin), c'o The Chiswick Polish Co. of Australia, Ltd., 338-356, Mitchell Road, Alexandria, N.S.W., Australia.
- 1893 \*Grant. James, M.Sc. (Manc.). Oaklands, Gardner Road. Prestwich, near Manchester.
- 1904 Gray, Archibald, Kirkland, Dalry, Ayrshire.
- 1890 Gray, G. Watson. S, Inner Temple. Dale Street, Liverpool. [c. 1919-.]
- 1907 Gray, James. P.O. Box 5254, Johannesburg, Transvaal, South Africa.
- 1918 Gray, James Ramsay, 37, Wellington Read, Charlton, London, S.E. 7.
- 1888 \*Gray, John, Spital Old Hall, Bromborough, Cheshire.
- 1916 Gray, Professor Thomas, D.Sc. (Glas.), Ph.D. (Jena), H.M. Fuel Research Station Blackwall Lane, East Greenwich, S.E. 10.
- 1918 \*Greaves, Richard Henry, B.Sc. (Lond.), M.Sc. (Wales), 3, Lydford Road, Westcliff-on-Sea, Essex.
- 1894 Greaves, William, 14, Wetherby Road, Roundhay, Leeds.
- 1887 \*Green. Professor Arthur George, Hon. M.Sc. (Leeds), F.R.S., Holloway Clough, Arthog Road, Hale, Cheshire. [c. 1904-07.]
- 1888 \*Green, John Edward, A.R.S.M., 195. Stretford Road, Urmston, Manchester; and Co-operative Wholesale Society. Irlam, near Manchester.
- 1877 \*Greenaway, Alfred John, The Orchard, Chertsey, Surrey. [c. 1892-95, 1902-05.]
- 1918 Greene, Stanley Gordon, Fairford, Penn Road, Beaconsfield, Bucks.

Date of

## FELLOWS.

- 1883 Greenish, Professor Henry George, 11, Grove Road, Willesden Green, London, N.W. 8. [c. 1906-09.]
- 1912 Greenough, Thomas Rigby, B.A. (Cantab.). Beechwood, Leigh, Lanes.
- 1878 \*Greenway, Thomas John, 369. Collins Street, Melbourne, Victoria.

  Australia.
- 1918 Greenwood, Harold Cecil, D.Sc. (Manc.), M.I.D., Research Laboratories, University College, Gower Place, W.C. 1. (Lieut., R.N.V.R.)
- 1917 Greenwood, Sidney Henry, 281. Radford Boulevard, Nottingham.
- 1914 \*Greeves, Alfred. B.Sc., A.R.C.S. Lond.), Wandsworth Technical Institute, Wandsworth, London, S.W. 18.
- 1907 Gregory, Joshua Craven, B.Sc. (Lond.), 3, Oak Villas, Bradford, Yorks.
- 1919 Grey, Egerton Charles, B.Sc. (Sydney), D.Sc. (Lond.), 6, Place Ste. Sulpice, Paris VI <sup>me</sup>. (Surgeon Sub-Lieut.)
- 1910 \*Grieb, Christopher Maurice Walter, B.Sc. (Lond.), The Mond Nickel Co., Clydach, near Swansea, S.O., Glam.
- 1919 Griffith, David Agnew, Silver Leigh, Poll Hill Road, Heswall, Cheshire.
- 1916 Griffiths, Richard Elliott, B.Sc. (Lond.). 20. Baldwyn Gardens, Acton, London, W. 3.
- 1900 Grimwood, Robert George, 14A, Graham Road, London, E. 8.
- 1916 Grinling, George Noel, 48, Micklegate, York.
- 1900 Grossman, Jacob, M.A., Ph.D. (Heidelberg), Chemical Laboratory, 157, Plymouth Grove, Manchester.
- 1877 \*Groves, Charles Edward, F.R.S., Kennington Green, London, S.E. II. [s. 1877-87; r. & s. 1887-92; v.-p. 1892-95.]
- 1918 Guthrie, Francis Clint, B.A., Cantab., The Roscote, Heswall, Cheshire.
- 1900 Guthrie, Frederick Bickell, Chemical Laboratory, Department of Agriculture, Sydney, N.S.W., Australia.
- 1904 \*Guthrie, Tom, B.Sc. (Vict.), Ph.D. (Strassburg), c/o The Colonial Sugar Refining Co., Ltd., O'Connell Street, Sydney, N.S.W., Australia.
- 1919 Guthrie, William Alexander, co Government Analytical Laboratory, Cairo; and 30, Roseburn Terrace, Murrayfield, Edinburgh.

# H

- 1914 Hackford, John Edward, B.Sc. (Lond.). c/o Messrs. S. Pearson & Son, Ltd., 47, Parliament Street, London, S.W. 1.
- 1902 Hackman, Charles Adolphus, 325, Kennington Road, London, S.E. 11.
- 1912 Haddon, John William, B.Sc. (Vict.), Government Analyst's Department, Singapore, Straits Settlements.
- 1916 \*Hadfield, Sir Robert Abbott, Bart., Hon. D.Met. (Sheff.), Hon. D.S.: (Leeds), F.R.S., 22, Carlton House Terrace, London, S.W. 1.
- 1888 \*Hailes, Alfred James de, 15, Red Lion Square, London, W.C. 1.
- 1913 Haines, Thomas Sidney, Messrs. Allen & Hanburys, Ltd., Bethnal Green, London, E. 2.

# Date of Admission FELLOWS.

- 1880 \*Hake, Cecil Napier, The Oriental Club. Hanover Square, London, W. 1.
- 1878 Hake, Henry Wilson, Ph.D. (Giessen), Westminster Hospital Medical School, Caxton Street, London, S.W. 1. [c. 1901-04.]
- 1915 Hale, Arthur James, B.Sc. (Lond.), Finsbury Technical College, Leonard Street, City Road, London, E.C. 2.
- 1894 Hall, Archibald, 7, Fenchurch Avenue, London, E.C. 3.
- 1903 Hall, Harold, Chemical Laboratory, S.E. & C. Railway, Ashford, Kent.
- 1898 Halliwell, Edward, Chief Inspector, c o The Ribble Joint Committee, 2, Stanley Place, Preston, Lancs.
- 1908 Halpin, James Francis, St. Chad's, Benson Road, Forest Hill, London, S.E. 23; and Custom House, London, E.C. 3.
- 1892 \*Hambly, Frederick John, c'o The Electric Reduction Co., Ltd., Buckingham, Quebec, Canada.
- 1918 Hamilton, David, Λ.R.T.C., "St. Catherine's," 31, Newlands Road-Newlands, Glasgow.
- 1918 Hamilton, Gavin, 18, Claremont Road, Rugby.
- 1918 Hamilton, James, 9, Esplanade Avenue, Whitley Bay, Northumberland.
- 1888 \*Hamlet, William Mogford, Glendowan, Glenbrook, N.S.W., Australia.
- 1914 Hampshire, Charles Herbert, B.Sc. (Lond.), University College Hospital.
  Gower Street, London, W.C. 1. (H.A.C.)
- 1919 Hancock, Algie. 2, Ashburn Road, Heaton Norris, Stockport.
- 1899 Hancock, Walter Charles, B.A. (Cantab.), 10, Upper Chadwell Street, Myddelton Square, London, E.C. 1. [c. 1909-12.]
- 1901 Hanes, Edgar Septimus, 34, Sarre Road, West Hampstead, London, N.W. 2.
- 1901 Hanley, John, 7, University Road, Bootle, Liverpool.
- 1902 Hannah. William Smith, Oak Lodge, Beddington Lane. near Croydon, Surrey.
- 1919 Hannay, James Ramsay, Know Mill House, Entwistle, nr. Bolton.
- 1906 Hansen, Edward Kenneth, M.A. (Cantab.). Woodthorpe, Royston Park Road, Hatch End, Middlesex; and 24, The Parade, High Street, Watford.
- 1888 Harbord, Frank William, C.B.E., A.R.S.M., 16. Victoria Street, Westminster, London, S.W. 1; and Englewick, Englefield Green, Surrey. [e. 1907-11; c. 1911-14, 19-.]
- 1904 Harden, Arthur, D.Sc. (Vict.), Ph.D. (Erlangen), F.R.S., 5, Cambridge Gardens, Marlborough Road, Richmond, Surrey. [e. 1906-10, 1919-; c. 1913-16; v.-p. 1916-19.]
- 1918 Harding, Gilbert, 20, Rosebery Road, Clapham Fark, London, S.W. 2. (Corporal, R.E
- 1898 Hardwick, William Roscoe, B.Sc. (Vict.), co Messrs. Huson and Hardwick, 13, Batavia Buildings, Hackin's Hey, Liverpool.
- 1888 Hargreaves, John, Widnes, Lancs.
- 1901 \*Hargreaves, William Arthur, D.Sc., M.A., B.C.E. (Melbourne), Dept. of Chemistry, Kintore Avenue, Adelaide, South Australia.

- 1918 Harmsworth, Walter Pierpoint, Chagford, Ruskin Road, Carshalton, Surrey.
- 1911 Harrington, Arthur George, 3, Westbury Road, Ealing, London, W. 5. (Captain, R.A.M.C.)
- 1906 Harris, Frederick William, 20, Trongate, Glasgow.
- 1908 \*Harrison, Henry George, M.A. (Cantab.), 124, Pepys Road, New Cross. London, S.E. 14; and 1, Southwark Street, London, S.E. 1.
- 1901 Harrison, John Bristowe Pease, c/o Messrs. Howards & Sons, Ltd., Uphall Works, Ilford, Essex.
- 1888 \*Harrison, John Barchmore, C.M.G., M.A. (Cantab.), Government Laboratory, Georgetown, Demorara.
- 1917 Harrison, Thomas Weatherill, B.Sc. (Lond.), 18, Elfindale Road, Herne Hill, London, S.E. 14; and Government Laboratory, Clement's Inn Passage, Strand, London, W.C. 2.
- 1918 Harrison, William, M.Sc. Tech. (Manc.). Beechwood, Walkden Road, Worsley, Manchester.
- 1887 Harrow, George Henry Unwin, Ph.D. (Wirzburg), Messrs. Barclay, Perkins & Co., Ltd., Park Street, Southwark, London, S.E. 1.
- 1890 Hart, William Beamont, Manchester Laboratory, 8, Exchange Street, Manchester.
- 1900 Hartley, Thomas, B.Sc. (Lond.), L.C.P., 64, Westlecot Road, Swindon, Wilts.
- 1902 \*Hart-Smith, James, A.R.C.S. (Lond.), The Secondary School, Latchmere Road, Battersea, London, S.W. 11.
- 1919 Harvey, Harold Minter, clo Messrs, Burgoyne, Burbidges & Co., High Street South, East Ham, London, E. 6.
- 1918 \*Harvey, Thomas Featherstone, 5, Park Hill Road, Chingford, London, E. 4.
- 1807 Hatfield, John Adams, c'o Messrs, J. Lysaght, Ltd., Orb Iron Works, Newport, Mon.
- 1900 Hawkins, Ernest Mostyn, Watling Chambers, Canterbury, Kent. [c. 1917-.]
- 1915 Hawley, Herbert, M.Sc. (Birm.), Analyst's Laboratory, 44. Broad Street, Birmingham. (Lieut., R.A.O.C.)
- 1917 Haworth, John, 31, Grove Road, Millhouses, Sheffield.
- 1911 Hawthorne, John, B.A. (R.U.I.), Ph.D. (Jena), 76, Scottish Temperance Buildings, 16, Donegall Square South, Belfast.
- 1918 Hay, James Gordon, 197, Portsdown Road, Maida Vale, London, W. 9. (2nd Lieut., R.E.)
- 1912 Hayman, Jack Vernon Johnson, A.C.G.I., The Government Analytical Laboratory, Public Works, Ministry Gardens, Cairo.
- 1913 Hayward, Eric, c/o Messrs. D. Waldie & Co., Chemical Works, Konnagar. Calcutta. (Calcutta Light Horse.)
- 1910 Hayworth, William Prince, Langdale, Storeton Road, Prenton, near Birkenhead, Cheshire.

- 1891 Head, Casimir James, 6. Laurence Pountney Hill, Cannon Street, London, E.C. 4.
- 1911 Heap, Harri, M.Sc. (Manc.). "Brunside," Lyndhurst Road, Withington, Manchester.
- 1917 Heathcote, Henry Leonard, M.Sc. (Birm.). Messrs. Rudge-Whitworth, Ltd., Coventry.
- 1917 Heaven, George Samuel, B.Sc. (Lond.), 9, Park Hill, Clapham. London, S.W. 4.
- 1805 Hefford, George Winfield, B.Sc. (Vict. and Leeds), 52, Salisbury Road, Moseley, Birmingham,
- 1878 \*Hehner, Otto, 11, Billiter Square, London, E.C. 3. "c. 1884-85, 88-91, 92-93, 1908-11, 12-15; v.-p. 1893-95, 99-1902, 15-18; e. 1895-99; (f. 1901-03.)
- 1911 Heilbron, Isodore Morris, Ph.D. (Leipzig), 7. Claremont Terrace, Glasgow. (Lieut.-Col., R.A.S.C.; D.S.O.; Gold Cross; Order of the Redeemer, Greece; thrice mentioned in despatches.)
- 1889 \*Hellon, Robert, Ph.D. (Heid.), A.R.S.M., 40, Lowther Street, Whitehaven.
- 1918 Hembrough, James, A.R.C.S. (Lond.). Principal, Newton Abbot Secondary School, Market Street, Newton Abbot, Devon.
- 1887 \*Henderson, Professor George Gerald, M.A., D.Sc. (Glas.), Hon. LL.D. (St. Andrews), Chemistry Department, The University, F.R.S., Glasgow; and 7, Marlborough Drive, Kelvinside, Glasgow. [c. 1897-1900, 08-11, 16-19; e. 1904-08.]
- 1901 Henderson, John Brownlie, The Government Chemical Laboratory, Brisbane, Queensland, Australia.
- 1894 \*Hendrick, Professor James. B.Sc. (Lond.), Agricultural Laboratory, The University, Aberdeen. [c. 1904-07.]
- 1908 Henley, The Hon. Francis Robert, M.A. (Oxon.), 49. Montagu Square, London, W. 1. (Captain.)
- 1919 Henshaw, Samuel, Dimsdale House, Wolstanton, Staffs.
- 1913 Henville, Douglas, 40, Lowgate, Hull. (Lieut., Hampshire Regt.)
- 1918 Hepworth, Harry, B.Sc. (Lond.), Messrs. Nobel's Explosives Co., Ltd., Ardeer Factory, Stevenston, Ayrshire.
- 1918 Heriot, Thomas Hawkins Percy, 48, Bank Street, Hillhead, Glasgow.
- 1877 \*Herman, Douglas, Rainhill, Lancs.; and c'o Chartered Bank of India, Bombay. [c. 1877-82, 93-96.]
- 1887 \*Herroun, Edward Felix, Ravenshaw, Croydon Road, Reigate, Surrey.
- 1878 Hewitt, David Basil, B.A. (Dub.), L.R.C.S. (Ireland), Grove Mount, Davenham, Cheshire. [c. 1883-89, 92-95.]
- 1904 Hewitt, Henry Dixon, co Messrs. James Fison & Sons. Ltd., Thetford, Norfolk.
- 1918 Heycock, Charles Thomas. M.A. (Cantab.). F.R.S.. King's College, Cambridge; and 3, St. Peter's Terrace, Cambridge.
- 1914 Heywood, Alfred Douglas, 172, Heaton Moor Road. nr. Stockport.
- 1878 Hibbert, Walter, 58, Clifton Gardens, Golders Green, London, N.W. 4.

- 1901 Higgin, Alfred James, The University, Melbourne, Victoria, Australia.
- 1909 Higgon, Mrs. Elsie Seville, B.S., (Lond.), 3, Berkeley Street, Cheltenham.
- 1911 Hilditch, Thomas Percy, D.S., (Londo, Birchdene, Cross Lane, Grappenhall, Cheshire.
- 1878 Hill, Alfred, M.D. (Aberd), M.R.C.S. (Eng.), L.S.A. (Lond.), Valentine Mount, Freshwater Bay, Isle of Wight. [c. 1882-85.]
- 1879 Hill, Professor Alfred Bostock, M.D. (Giessen), L.R.C.P., L.R.C.S. (Edin.), L.S.A. (Lond.), D.P.H. (Cantab.), Hon. M.Sc. (Birm.), Unity Buildings, Temple Street, Birmingham.
- 1899 \*Hill, Charles Alexander, B.Sc. (Lond.), c o The British Drug Houses, Ltd.. 22–30. Graham Street, City Road, London, N. 1; and 30, Queen's Gate Terrace, London, S.W. 7. [c. 1913–16]
- 1915 Hill, Edgar, A.R.C.S. (Lond.), 27, Alteryn Road, Newport, Mon.
- 1899 Hill, Thomas Eustace, O.B.E., M.B., B.Sc. (Edin.), Shire Hall, Durham; and Birchfield, Woodlands Road, Darlington.
- 1908 Hills, James Stuart, Oxford Works, Tower Bridge Road, London, S.E. I. (Lieut., R.N.V.R.)
- 1917 Hinchley, Professor John William, A.R.C.S., 55, Redeliffe Road, London, S.W. 10.
- 1910 Hind, Herbert Lloyd. B.Sc. (Lond.). N.A.C.B., Wimereux, France. Captain, R.A.S.C.)
- 1907 Hinkel, Leonard Eric, B.Sc. (Lond.), A.K.C., Bucklands, Old Oak Road, Acton, London, W. 3.
- 1904 Hinks, Edward, M.B.E., B.Sc. (Lond.), Analytical Laboratory, 16, Southwark Street, London, S.E. 1. (Acting Major, R.A.O.C.) [c. 1913-15.]
- 1902 Hinks, Percy John, O.B.E., A.R.C.S. (Lond.), Woodstock, Beaconsfield Road, Blackheath, London, S.E. 3.
- 1916 Hinton, Cyril Langley, Tyler's Cross, Roydon, Ware.
- 1919 Hirst, Henry Reginald, B.Sc. (Leeds), Collingham Bridge, nr. Leeds.
- 1912 Hoblyn, John Bright, A.R.C.S. (Lond.), Messrs. The Vauxhall Motors, Ltd., Luton, Beds.
- 1877 \*Hodges, John Frederick William, Glenravel House, Glenravel, co. Antrim.
- 1883 Hodgkin, John, 131, Hamlet Gardens Mansions, Ravenscourt Park London, W. 6.
- 1878 Hodgkinson, Professor William Richard Eaton, C.B.E., Ph.D. (Würzburg), 89, Shooters Hill Road, Blackheath, London, S.E. 3. [e. 1880-82; c. 99-1902, 08-11, 14-17.]
- 1919 Hodgson, Herbert Henry, M.A. (Cantab.), Ph.D. (Heid.), B Sc. (Lond.). 136, Paley Road, Bradford.
- 1910 Hodgson, Thomas Reginald, M.A. (Cantab.), 34, John Dalton Street Manchester. (Captain, R.A.S.C.)
- 1918 Hodsman, Henry James, M.Sc. (Leeds), 42, Richmond Mount. Headingley, Leeds.
- 1912 Hogan, George, Public Health Laboratories, Department of Public Health, Cairo, Egypt.

- 1888 \*Hogben, Walter, 8, Coates Gardens, Edinburgh.
- 1911 Holborow, Alfred George, Health Dept., Boulevard, Weston-super-Mare.
- 1919 Holden, George Edward, M.Sc. Tech. (Manc. . 23, Durnford Street Middleton, nr. Manchester.
- 1887 Holland, Philip, 22, Taviton Street, Gordon Square, London, W.C. 1.
- 1917 Hollely, William Francis, 67. Ross Road, Wallington, Surrey.
- 1918 Hollingworth, David Vincent, Birchenwood Collieries, Kidsgrove, Stokeon-Trent.
- 1918 Holt, Alfred, M.A. Cantab.), D.Sc. (Manc.), Dowsefield, Allerton, Liverpool.
- 1918 Homer, Miss Annie, D.Sc. (Dublin), Lister Institute of Preventive Medicine, Chelsea Gardens, London, S.W. 1.
- 1894 Homfray, David, B.Sc. (Lond.).
- 1917 Honneyman, William, B.Sc., 21, Caldecot Road, Denmark Hill, London, S.E. 5. (Corporal, R.E.)
- 1883 Hooker, Ayerst Henham, Boulac, Cairo, Egypt.
- 1888 Hooper, David, LL.D. (Toronto), 2, Bristol Road, Weston-super-Mare.
- \*Hooper, Egbert Grant. 16, Royal Avenue, Sloane Square, London, S.W. 1; and Government Laboratory, Clement's Inn Passage, Strand, London, W.C. 2. [c. 1905-08; v.-p. 1908-11.]
- 1909 Hooper, Elsie Seville, B.Sc. (Lond.). See Higgon.
- 1908 Hooton, William Marrs, M.A. (Oxon.), M.Sc. (Liv.), Repton, Derby.
- 1887 Hopkins. Professor Frederick Gowland, D.Sc., M.B. (Lond.), M.A. (Cantab.), M.R.C.S. (Eng.), L.R.C.P. (Lond.), F.R.S., Saxmeadham, Grange Road, Cambridge. [e. 1905-09. 14-; c. 1909-12.]
- 1918 Hopkins, Reginald Haydn, B.Sc. (Birm.), 320, Rotton Park Road, Birmingham.
- 1919 Hopkins, Thomas, B.Sc. (Lond. and Wales). c/o Messrs. Nobel's Explosives Co., Ltd., Ardeer Factory, Stevenston, Ayrshire.
- 1918 Hopper, Isaac Vance, A.R.C.S.I., Kildress, Cookstown, co. Tyrone.
- 1907 Hopwood, Arthur, A.R.C.S. (Lond.), D.Sc. (Manc.), Springfield, Northumberland Road, Carlisle.
- 1887 Hoskins, Arthur Percy, Clonlee, Rosetta Park, Belfast.
- 1918 Houlder, Bertram Ernest. 50, Lady Margaret Road, Southall, Middlesex.
- 1910 Houseman, Percy Alfred, Ph.D. (Würzburg), c o Messrs. The Macandrews & Forbes Co., Third Street and Jefferson Avenue, Camden, N.J., U.S.A.
- 1907 Howard, Bernard Farmborough, Firbank, Loughton, Essex. (Lieut., Artists Rifles.)
- 1878 \*Howard, Thomas, 50, Ellington Street, Liverpool Road, London, N. 7.
- 1917 Hoyland, Francis William, co R. A. Cripps, Esq., F.I.C., The Laboratory, D'Avigdor Road, Hove, Sussex.
- 1904 Hübner, Julius, M.Sc. Tech. (Manc.), "Linden," Cheadle Hulme, Cheshire.

### FELLOWS

- 1899 Hudson-Cox, Frederick, Analytical Laboratory, 87, St. Thomas's Street Weymouth.
- 1879 Hughes, John, 79, Mark Lane, London, E.C. 3 [c. 1891-94, 97-1900.]
- 1888 Hughes, Theophilus Vaughan, A.R.S.M., Admont, Coed Coch Road, Colwyn, N. Wales,
- 1888 \*Hughes, Thomas, Borough Analyst's Office, 31, Loudoun Square, Cardiff.
- 1916 Hulton, Henry Francis Everard, 15, Oakhill Court, East Putney, London, S.W. 15,
- 1888 Hunt, Bertram, c'o Messrs. Edmund Hunt & Co., 121, West George Street, Glasgow.
- 1900 \*Hunt, Philip Charles Holmes, M.Inst.C.E., 90. Queen Street, Melbourne, Victoria, Australia.
- 1894 Huntly, George Nevill, B.Sc. (Lond.), A.R.C.S. (Lond.), 28, Victoria Street, Westminster, London, S.W. 1 [e. 1915-.]
- 1910 Hurst, Harry, B.Sc. (Lond.), Public Analyst and Bacteriologist, Manneville Chambers, Acresfield, Bolton, Lancs.
- 1882 Hutchinson, Thomas James, Aden House, Manchester Road, Bury.
- 1919 Hutchison, George Lewis, B.Sc. (Lond.), 3, Eliot Vale, Blackheath, London, S.E. 3.
- 1877 Huxley, James Henry, A.R.S.M., 15, Kenwood Park Road, Sharrow, Sheffield.

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- 1918 Ibbotson, Fred, B.Sc. (Lond.), A.R.C.S.I., 99, Bower Road, Sheffield.
- 1918 Illingworth, Stewart Roy, A.R.C.S. Lond.1, School of Mines, Treforest, Glam. (Lieut., R.A.O.C.)
- 1902 \*Imrie, John, 30, Osgethorpe Road, Sheffield.
- 1894 Ingle, Harry, Ph.D. (Munich), B.Sc. (Vict.), D.Sc. (Leeds), 26, Bond Street, Leeds.
- 1888 \*Ingle, Herbert, B.Sc. (Leeds), Cliff Cottage, Cliff Road, Headingley, Leeds,
- 1911 Inglis, John Kenneth Harold, M.A., B.Sc. (New Zealand), D.Sc. (Edin.), University of Otago, Dunedin, New Zealand.
- 1916 Innes, Alfred George, M.A. (Oxon.), Ph.D. (Z rich), Deputy Director, Government Laboratory, Cairo. (Lieut., R.N.A.S.)
- 1910 Innes, Robert Faraday, c/o The British Chrome Tanning Co., Ltd., St. Andrew's Tannery, Northampton.
- 1900 Innes, William Ross, Ph.D. (Heidelberg), D.Sc. (Vict.), 121, Norton Way, Letchworth, Herts.
- 1916 Isherwood, Percy Claude Cameron, Ph.D. (Würzburg), Moss Cottage, Bushey Heath, Herts.

## FELLOWS.

# J

- 1919 Jackson, Ernest Wilfrid, Godrevy, Saltburn-by-the-Sea, Yorks.
- 1887 Jackson, Sir Herbert, K.B.E., F.R.S., 49, Lansdowne Road, Holland Park Avenue, London, W. 11, [c. 1904-07, 16; v.-p. 1907-08, 16-18; e. 1908-16; P. 1918-.]
- 1901 Jackson, Percy George, c/o Messrs. Lever Bros., Ltd., Chemical Laboratories, Port Sunlight, Cheshire,
- 1895 Jackson, Samuel, O.B.E., A.R.C.S. (Lond.), 3, Buckingham Gardens, Perambore Barracks, Madras, India.
- 1884 \*Jago, William, Barrister-at-Law (Lincoln's Inn), 17, Wilbury Avenue, Hove, Sussex.
- 1910 James, Benjamin Richards, Public Control Department, London County Council, Gloucester House, 19, Charing Cross Road, London, W.C. 2. (R.N.A.S.)
- 1907 James, Charles.
- 1918 James, Cuthbert William, M.Sc. (Wales), 74, Nolton Street, Bridgend, Glam.
- 1908 James, Garnet Williams, M.A. (Oxon.). 7, Hitherfield Road, Streatham. London, S.W. 16.
- 1918 James, Thomas Campbell, M.A. (Cantab.). D.Sc. (Wales), Val Solda, Caradoc Road, Aberystwyth, Wales.
- 1906 Jamieson, James Sprunt, The Government Laboratory, Berea, Durban, Natal, South Africa.
- 1880 Jamieson, Thomas, 10, Belmont Street, Aberdeen.
- 1879 \*Japp, Professor Francis Robert, M.A., Hon. LL.D. (St. Andrews), F.R.S., 36, Twyford Avenue, West Acton, London, W. 3. [c. 1885-89, 98-1901; v.-p. 1901-04.]
- 1913 Jaques, Arthur. D.Sc. (Dun.), 37, Sandringham Road, Waterloo, Liverpool.
- 1887 Jarmay, Sir John G., K.B.E., Hartford Lodge, Hartford, Cheshire.
- 1919 Jenkins, Henry Charles, A.R.S.M., 815/17, Salisbury House, London, E.C. 2.
- 1905 Jenkins, John Edward, 11, Cargreen Road, South Norwood, London, S.E. 25.
- 1902 Jenks, Robert Leonard, A.C.G.I., Chemical Examiner for Customs and Excise, 1. Charnock Place, Calcutta, India. (2nd Lieut., Indian Defence Force.)
- 1894 Jennison, Francis Herbert, 11. Upton Avenue, Upton Lane, Forest Gate, London, E. 7.
- 1888 Jewson, Francis Albert Bowen, 26, Aldebert Terrace, London, S.W. S.
- 1907 Jewson, Frederick Trevor, Earith, near St. Ives, Hunts.
- 1883 Jobson, Thomas, Crucible Steel Company of America, Atha Works, Newark, N.J., U.S.A.
- 1885 Johnson, Alfred Edward, E.Sc. (Lond). A.R.C.S.I., 24, Parkdale. Wolverhampton.

- 1896 \*Johnson, Edmond Ernest, c/o Messrs. Adcocks, Drayton Park Works. Highbury, London, N. 5.
- 1909 Johnson, Frederick Murray Godschall, Ph.D. (Breslau), M.Sc. (Montreal), Department of Chemistry and Mineralogy, McGill University, Montreal, Canada; and 286, Peel Street, Montreal, P.Q., Canada.
- 1912 Johnson, George Edward, B.Sc. (Lond.), Technical College, Park Street. Hull.
- 1888 Johnson, James Edward, 133, Earlham Grove, Forest Gate, London, E. 7.
- 1904 \*Johnston, John Haskim, M.Sc. (Vict.), 1, Arundel Street, Strand, London, W.C. 2.
- 1888 Johnstone, James, Shawfield Works, Rutherglen, Lanarkshire.
- 1904 Jollyman, Walter Henry, S.N.A. Office, Zomba, Nyasaland. (Staff Sergeant.)
- 1917 Jones, David Trevor, M.Sc. (Vict.), 97, Argyle Road, Saltcoats, Ayrshire.
- 1888 Jones, Edward, B.Sc. (Lond.), 34, Victoria Road, Gipsy Hill, London, S.E. 19.
- 1917 Jones, Edward Towyn, M.Sc. (Wales), County School, Blaenau Festiniog, N. Wales.
- 1878 Jones, Edward William Taylor, 10. Victoria Street, Wolverhampton. [c. 1881-84, 93-94, 95-98, 1901-04.]
- 1907 Jones, Ernest Gabriel, M.Sc. (Vict. and Liv.), City Analyst's Department, City Laboratories, Mount Pleasant, Liverpool.
- 1905 \*Jones, Ernest Victor, 2, Merridale Grove, Wolverhampton.
- 1902 \*Jones, George Cecil. A.C.G.I., 43-45. Great Tower Street, London, E.C. 3. (Petty Officer, R.N.V.R.)
- 1891 \*Jones, Hedley Gordon, 32, Beech-hill Road, Eltham, Kent.
- 1880 \*Jones, Henry Chapman, Birnam, 67. Shakespeare Road, Hanwell London, W. 7. [c. 1896-99.]
- 1906 Jones, Philip Henry, 7, James Street, Oxton, Birkenhead.
- 1919 Jordan, Louis Arnold, B.Sc., A.R.C.S. (Lond.), Messrs. Boots Pure Drug Co., Nottingham.
- 1916 \*Joseph, Professor Alfred Francis, A.R.C.S., D.Sc. (Lond.), Government Chemist, Gordon College, Khartoum, Sudan.
- 1917 Joshua, Walter Philip, Ph.D. (Zürich), 11, Belsize Park Gardens, London, N.W. 3.
- 1911 \*Joy, Arthur Stanley, A.R.C.S. (Lond.), Manor House School, Clapham Common, London, S.W. 4. (Sergeant, R.E.)
- 1902 \*Joyce, Thomas Goode, B.Sc. (Lond.), Lyttleton Preserve Works, Bromford Lane, West Bromwich.
- 1906 Juritz, Charles Frederick, M.A., D.Sc. (Cape of Good Hope), D.Sc. (Adelaide), Agricultural Research Chemist, Department of Agriculture, Cape Town, South Africa.

## FELLOWS.

# K

- 1918 Kaye, John. M.A., B.Sc. (Glas.), Westerfield, Perth.
- 1887 \*Keane, Charles Alexander, Ph.D. (Erlangen), D.Sc. (Vict.), The Sir John Cass Technical Institute, Jewry Street, Aldgate, London, E.C. 3. [c. 1909-10.]
- 1917 Keith, Robert Philip, A.R.T.C. (Glas.), Forthbank, Lenzie, Scotland; and c/o Messrs. Claus & Co., Ltd., Clayton, Manchester
- 1878 Kellner, William, Ph.D. (Göttingen), 135, Victoria Road, Old Charlton, London, S.E. 7. [c. 1895-98.]
- 1878 Kendall, James Alfred, Lonesome Chemical Works, Streatham Common, London, S.W. 16.
- 1902 Kendrew, Thomas, Broughton Copper Works, Salford, Manchester.
- 1917 Kent-Jones, Douglas William, B.Sc. (Lond.), c/o Messrs. Woodlands, Ltd., Granville Street, Dover. (Lieut., R.E., attached R.A.F.; mentioned in despatches.)
- 1906 Kerr, James Stewart, A.R.C.S. (Lond.). 19. Reservoir Road, Edgbaston. Birmingham.
- 1895 Kershaw, John Baker Cannington, Consulting and Analytical Chemist, 9, Grosvenor Road, Colwyn Bay, N. Wales.
- 1910 Kettle, James David, B.Sc. (Lond.), 17, Herndon Road, East Hill, Wandsworth, London, S.W. 18.
- 1918 \*Kewley, James. M.A. (Cantab.), co The Asiatic Petroleum Co.. St. Helens Court, Gt. St. Helens, London, E.C. 3.
- 1897 Kibble. William Oakes, c/o The Permutit Co., 440, Fourth Avenue, New York, U.S.A.
- 1878 \*Kinch, Professor Edward, Komaba, Haslemere, Surrey. [c. 1885-88, 92-95, 99-1902.]
- 1910 King, Albert Theodore, B.Sc. (Lond.), 39, Kenilworth Avenue, Wimbledon, London, S.W. 19.
- 1907 King, Frank Eustace, B.Sc. (Lond.), 75, Gracechurch Street, London, E.C. 3. (Captain, Assistant Chemical Adviser.)
- 1917 King, George, M.Sc. (Birm.), 25, Whitmore Road, Smallheath. Birmingham; and c'o Messrs. Albright & Wilson, Ltd., Oldbury, Birmingham.
- 1916 King, James Grieve, Roslin, 33, St. Meddan's Street, Troon.
- 1877 Kingzett, Charles Thomas, "Maplin," Frinton-on-Sea, Essex. [c. 1877-82, 93-94.]
- 1905 Kinnersley, Henry Wulff, Ingleside, Abbey Park, Keynsham, Somerset. (Lieut., R.A.O.C.)
- 1898 Kipping, Professor Frederic Stanley, D.Sc. (Lond.), Ph.D. (Munich), F.R.S., University College, Nottingham. [c. 1899-1902.]
- 1897 \*Kirkaldy, Professor Patrick Henry, King's College, Strand, London. W.C. 2. [c. 1916-19.]
- 1908 Kirkham, Vincent Herbert, B.Sc. (Lond.), Agric. Dip. (Cantab.), Government Laboratory, Nairobi. British East Africa. (Captain, Unattached List, East Africa.)

## FELLOWS.

- 1906 Kirkhope, Thomas Bertram, Sandbank, Gwithian, Hayle, Cornwall.
- 1888 Kitto, Benedict, Assav Office, 368, City Road, London, E.C. 1.
- 1888 Kling, Archibald, Court Lees, Warwick Park, Tunbridge Wells.
- 1919 Kloot, Alfred Aaron, B.Sc. (Lond.), Box 1080, Johannesburg, S. Africa.
- 1915 Knapman, Percy George, B.Sc. (Lond.), 17, Woodland Road, Chingford, Essex.
- 1906 Knapp, Arthur William, B.Sc. (Lond. and Birm.), Trinidad, Pineapple Road, King's Heath, Birmingham.
- 1888 Knecht, Professor Edmund, Ph.D. (Zürich), M.Sc. Tech. (Manc.), College of Technology, Manchester; and Beech Mount, Marple, Cheshire.
- 1888 Knight, Alfred Henry, Derrylin, Oxton, Cheshire. c. 1914-17.
- 1912 Knight, Harley Fancutt, 14, Old Queen Street, Westminster, London, S.W. 1.
- 1913 Knight, Leslie, A.R.S M., Derrylin, Oxton, Cheshire. (Captain, R.F.A.: mentioned in despatches.)
- 1917 Knight, Reginald Sydney Gilbert, A.R.C.S., B.Sc. (Lond.), Royal Naval Cordite Factory, Holton Heath, near Wareham, Dorset.
- 1880 Knights, James West, 67, Tenison Road, Cambridge.
- 1915 \*Krall, Hans, B.A. (Dub.), Agra College, Agra, India. Trooper, United Provinces Horse.)

## L

- 1908 Lacell, Harold George, A.R.C.S. (Lond.), Enderley, Lansdowne Road, Finchley, London, N. 3. [c. 1917-.]
- 1911 Ladell, William Richard Simpson, Ordnance Depo York, Major, R.A.O.C.)
- 1917 Lambourne, Christopher, M.A. (Oxon.), 214, Cathedral Road, Cardiff.
- 1917 Lambourne, Herbert, B.Sc. (Lond.), 32, Mansfield Road, Croydon, Surrey. (Lieut., R.A.F.)
- 1903 Lander, George Druce, D.Sc. (St. Andrews and Lond.), The Royal Veterinary College, Camden Town, London, N.W.1.
- 1910 Lane, Joseph Henry, B.Sc. (Lond.), 571, Commercial Road, London, E. 1.
- 1903 Lang, Professor William Robert, D.Sc. Glas.), The University, Toronto, Canada. (Colonel, General Staff, Canadian Expeditionary Force.)
- 1918 Lantsberry, Fred Charles Alfred Hyatt, M.Sc. Tech. (Manc.), 63, Walford Road, Sparkbrook, Birmingham.
- 1888 Lapper, Edwin, L.R.C.S., F.R.C.P. (Ireland), The Royal College of Surgeons in Ireland, Dublin.
- 1902 Lapworth, Professor Arthur, D.Sc. (Lond.), B.Sc. (Birm.), F.R.S., The University, Manchester. [c. 1916.]
- 1888 Last, Frank Bernard, Maes-y-Mor, Grand Avenue, Stourwood, Bournemouth.

- 1910 Lathwood, Arthur, B.Sc. (Lond.). 3. Maidstone Road, Bounds Green, London, N. 11.
- 1912 Lauder, Alexander, D.Sc. (Edin.), 13. George Square. Edinburgh. [c. 1916-19.]
- 1910 Law, Douglas John, B.Sc. (Lond., Trent Bridge Leather Works, Nottingham, (Lieut., R.E.)
- 1894 \*Law, Robert, Royal Mint, Melbourne, Victoria, Australia. (Lieut.-Colonel, Australian Engineers.)
- 1908 Laws, Harry Edwin, B.Sc. (Lond.), Chazalia, Park Avenue, Watford.
- 1887 Laws, Joseph Parry, Laurel Bank, Claremont Road, Headingley, Leeds.
- 1913 Leach, Frederick Peacock, D.Sc., A.R.C.S. (Lond.), Lyndon, Overton, Frodsham, Cheshire.
- 1890 Leather, John Walter, V.D., c'o Messrs, Grindlay & Co., 54, Parliament Street, London, S.W. 1. (Major, Cheshire Regt.)
- 1919 Lee, John William, Birchill Lodge, Hasland, Chesterfield.
- 1878 Leebody, Professor John Robinson, M.A., D.Sc. (R.U.I.). Magee College, Londonderry.
- 1918 Leech, Benjamin, M.A. (Cantab.). Beech Knoll. Macclesfield.
- 1912 Lees, Frederic Herbert, 31, Summerhill Road, Dartford, Kent.
- 1918 Legg, David Alliston, 17, Pepys Road, Raynes Park, London, S.W. 19.
- 1880 \*Legg, John Edmund, M.A. (Cantab.), Cae Rhys, Dorchester Road, Weymouth.
- 1895 Leigh, Cecil, co Messrs. Thermit. Ltd., 675, Commercial Road, Limehouse, Poplar, London E. 14.
- 1907 \*Leighton, Arthur Edgar, Defence Department, Melbourne, Australia. [c. 1917.]
- 1916 Lennox, Robert Nicol, Morvah, Hartington Road, Chiswick, London, W. 13.
- 1917 Leonard, Alfred Godfrey Gordon, A.R.C.S.I., B.Sc. (Lond.), Ph.D. (Bonn): 18, Belgrave Road, Rathmines, Dublin; and Royal College of Science, Dublin.
- 1893 Lester, Joseph Henry, M.Sc. Vict.), Grange Drive, Morton Green, Eccles.
  [c. 1918—]
- 1898 \*Le Sueur, Henry Rondel, D.Sc. (Lond.), Theydon House, Beech Hill, Hadley Wood, Middlesex. (Major, R.E.). [c. 1914-17.]
- 1917 Levinstein, Herbert, M.Sc. (Vict.), Ph.D. (Zurich), Newlands, Broughton Park, Manchester.
- 1911 Levy, Leonard Angelo, M.A. (Cantab.), D.Sc. (Lond.), 31. Shoot-up Hill, London, N.W. 2. (Captain, R.E.)
- 1918 Levy, Stanley Isaac, B.A. (Cantab.), B.Sc. (Lond.), Hayne, Goldsworth Road, Woking, Surrey.
- 1878 Lewin, George, 26, Orlando Road, Clapham Common, London, S.W. 4.
  [c. 1895-98, 1900-03.]
- 1918 Lewin, Hugh James. Royal Clarence Yard, Gosport.
- 1909 Lewis, Samuel Judd, B.Sc. (Lond.), D.Sc. (Tübingen), Staple Inn Buildings, High Holborn, London, W.C. 1.

- 1903 Lewis, William Henry, M.A. (Oxon.), Albert Memorial College, Exeter.
- 1909 Lickorish, Adrian Joseph Clifford, 28. Causton Road, Highgate, London, N. 6.
- 1897 Lilburne, John, Customs and Excise Laboratory, Custom House, Liverpool.
- 1912 Linch, Frank William, M.Sc. (Lond.), Beech Lawn, Dudley Road, Whalley Range, Manchester.
- 1888 Ling, Arthur Robert, 74, Great Tower Street, London, E.C. 3. [c. 1906-09.]
- 1902 \*Lishman, George Percy, D.Sc. (Edin.), The Lambton and Hetton Collieries, Ltd., Lambton Coke Works, Fence Houses, co. Durham.
- 1907 Littlebury, William Oswald, B.Sc. (Lond.), St. John's, Eglinton Place, Saltcoats, Ayrshire.
- 1911 Littlefield, Robert Dexter, West View, The Avenue, Roundhay, Leeds: and Local Government Board, Whitehall, London, S.W. 1.
- 1878 \*Liveing, Professor George Downing, M.A. (Cantab.), Hon. Sc.D. (Dub. and Cantab.), F.R.S., The Pightle, Cambridge.
- 1909 Liversedge, Samuel Gordon, Swan Flour Mills, Hull. (Corporal, R.E.)
- 1892 \*Liverseege, John Francis, City of Birmingham Analytical Department, 44, Broad Street, Birmingham.
- 1878 \*Liversidge, Professor Archibald, M.A. (Cantab.), Hon. LL.D. (Glas.), A.R.S.M., F.R.S., Fieldhead, Coombe Warren, Kingston, Surrey.
- 1887 Livingston, William John, 30, Fountayne Road, Stoke Newington Common, London, N. 16.
- 1887 \*Lloyd, Frederick James, 135, Queen's Road, Fin-bury Park, London, N. 4. [c. 1917-.]
- 1905 Lloyd, John Alexander, Ph.D. (Würzburg), M.Sc. (Birm.', B.Sc. (Lond.), Woodslee, Bromborough, Cheshire.
- 1918 Lloyd, Lorenzo Lyddon, Ph.D. (Birm.), Technical College, Bradford.
- 1909 Lloyd, Thomas Henry, c/o Messrs. Quibell Bros., Ltd., Newark.
- 1916 \*Lodge, Edward, 33, Scale Hill, Cowcliffe, Huddersfield.
- 1895 Lones, Joseph, 41, Vicarage Road, Smethwick, Staffs.
- 1919 Longstaff, James Patrick, D.Sc. Edin.), Central House, Finsbury Square, London, E.C. 2.
- 1878 \*Loram, Herbert Yabsley. 49, Buxton Road, Chingford, Essex.
- 1896 Lord, John Goodsir, M.A. (Oxon.), Merchant Taylors' School, Charterhouse Square, London, E.C. 1.
- 1880 Louis, Professor Henry, M.A. (Dun.), A.R.S.M.. Armstrong College Newcastle-on-Tyne.
- 1891 \*Lowe, Clement Ward, Thorneyholme, Knutsford, Cheshire.
- 1914 Lowe, Harold, M.Sc. (Manc.), The Poplars, Park West, Heswall, Cheshire.
- 1878 \*Lowe, William Foulkes, A.R.S.M., 9, Hough Green, Chester.
- 1919 \*Lowry, Thomas Martin, D.Sc. (Lond.), F.R.S., 17, Eliot Park, Lewisham, London, S.E. 13.

## FELLOWS.

- 1904 \*Lowson, William, B.Sc. (Lond. and Leeds), The University, Leeds.
- 1906 \*Lucas, Alfred, Government Analytical Laboratory, Cairo, Egypt.
- 1904 \*Lucas, Edward William, C.B.E., Oxford Works. Tower Bridge Road, London, S.E. 1. (Chief Petty Officer, R.N.V.R.)
- 1918 Luck, Alfred Courtenay, 25 de Mayo, 611, Buenos Aires. Argentina.
- 1916 Lucking. Herbert Leslie, Ph.D. (Heid.), Hardwick, Garrick Avenue, Golders Green, London, N.W. 4. (Lieut., R.A.F.)
- 1911 Luff, Bernard Dunstan Wilkinson, 85. Ashley Terrace, Edinburgh.
- 1891 Lumsden, Alexander Anderson, Forth Chemical Works, Bo'ness.
- 1918 Lumsden, Colin Henry, B.Sc. (Lond.), Beech Lawn, Whalley Range, Manchester.
- 1905 Lumsden, William Watt, Hampden, Saltcoats.
- 1908 \*Lundholm, Carl Olof, 33, Beulah Hill, Upper Norwood, London, S.E. 19.
- 1897 Lunt, Joseph, D.Sc. (Vict.), The Royal Observatory, Cape of Good Hope.
- 1895 \*Luxmoore, Charles Mann, D.Sc. (Lond.), 49. Garden Avenue, Mitcham, Surrey.
- 1913 Lyell, Henry Robert, A.K.C., "Redcott," Dacres Road, Forest Hill, London, S.E. 23.
- 1902 Lyle, Robert Ferris, 37, Robertson Street, Greenock.

# M

- 1909 Macadam, Elison Ann, sec Desch.
- 1892 Macadam, Stevenson John Charles George, Analytical Laboratory, 55, York Place, Edinburgh.
- 1904 \*Macara, Thomas, 20, Denton Road, Stroud Green, London, N. 4.
- 1918 Macbeth, Alexander Killen, M.A., D.Sc. (Belfast), 3, Victoria Terrace, Cregagh, Belfast, Ireland.
- 1888 MacCabe, William Bernard, M.Inst.C.E., Kismet, Clarence Point, West Tamar, Tasmania.
- 1918 MacCallum, Douglas Archibald, 93. Hope Street. Glasgow; and 10, Midlothian Drive, Shawlands, Glasgow.
- 1917 MacDonald. George William. O.B.E., M.A., M.Sc. (Melbourne), White-friars, Rochester, Kent.
- 1894 MacDonald, William, A.R.C.S., A.R.S.M., Custom House, Samshui, Kwangtung, China.
- 1889 \*Macfarlane, Principal Walter, Kelvin Villa, Hollies Drive, Wednesbury, Staffs; and County Metallurgical and Engineering Institute, Wednesbury.
- 1888 \*Mackey, William McDonnell, Victoria Chambers, South Parade, Leeds.
- 1918 MacLean, Mrs. Ida Smedley, D.Sc. (Lond.). 68, Overstrand Mansions, Battersea Park, London, S.W. 11.
- 1904 Macleod, James, Clairmont, 54, Albert Drive, Pollokshields. Glasgow.

- 1887 \*Macnab, William, 10, Cromwell Crescent, London, S.W. 5. [c. 1893-96, 1907-10, 1913-16; 18-.]
- 1918 MacWhirter, James, Elsinore. Milngavie, Dumbartonshire.
- 1897 Makin, Charles James Shaw, 47, Vineyard Hill, Wimbledon Park, London, S.W. 19. (Lieut., General List.)
- 1908 \*Male, Charles Edgar, P.O. Box 141, Kobe, Japan.
- 1888 \*Mallet, Frederic Richard, 20, King's Avenue, Ealing, London, W. 5.
- 1914 Mann, Edward Alexander, Government Analyst's Office, Wellington Street, Perth, Western Australia.
- 1913 Mann. Ernest William. B.Sc. Lond.), Messrs. Southall Bros. & Barclay, Charford Chemical Works, Saltley, Birmingham.
- 1898 Mann, Harold Hart, D.Sc. (Leeds), M.Sc. (Vict.). Agricultural College, Poona, India.
- 1911 \*Mansfield, Herbert, B.Sc. (Lond.), 6, Aubrey Road, Crouch End, London, N. 8.
- 1912 Marcan, Alexander, H.S.M. Royal Mint, Bangkok, Siam.
- 1912 Marks, Arthur, A.R.C.S. (Lond.), A.R.S.M., Head of Chemical and Mechanical Laboratories, Messrs, Harland & Wolff's, Ltd., Queen's Island, Belfast.
- 1913 Marlow, George Stanley Withers, B.Sc. Lond., 37, Collingtree Road, Sydenham, London, S.E. 26. [Asst. Sec. 1919.]
- 1891 Marriott, Thomas Bruce, co The Century Trust, Ltd., 20, Copthall Avenue, London, E.C. 2. (Lieut, R.E.)
- 1916 Marsden, Ernest, 46, Talbot Street, Moss Side, Manchester.
- 1902 \*Marshall, Arthur, A.C.G.I., Waverley Cottage, Naini Tal, India.
- 1919 Marshall, Joseph, D.Sc. (Leeds). 11. George Road, West Bridgford, Notts.
- 1891 \*Marshall, William, Greenwood Lee, Bramhall Park, Cheadle Hulme, Manchester: and Laboratory. Ladybrook Road, Cheadle Hulme, near Stockport.
- 1913 Martin, Francis Grimshaw, B.Sc. (Birm.), 9, Cheltenham Avenue, Sefton Park, Liverpool.
- 1917 Martin, Geoffrey, D.Sc. (Lond. and Bris.). Ph.D. (Rostock). Co-operative Wholesale Society, Ltd.. Research Dept., Insurance Buildings, 109, Corporation Street, Manchester.
- 1914 Mason, Harry Malkin, c'o Mrs. Crooks, Hazelwell, Broom Lane, Rotherham, Yorks. (Captain, R.A.O.C.)
- 1918 Masson, Professor David Orme, C.B.E., M.A., D.Sc. (Edin.), F.R.S., The University, Melbourne, Australia.
- 1912 Masson, Robert Duncan, co Messrs. Anderson, Wright & Co., Calcutta, India; and c/o Messrs. Clark, Wilson & Co., 93, Gracechurch Street, London, E.C. 3.
- 1918 Masters, Edgar Alan, B.Sc. (Lond.), 94, Knightsbridge, London, S.W. 1. (Major, R.A.S.C.; M.C.)
- 1880 \*Mathew, William Edward Brisé de Vere, Dinham, Hillside Gardens, Wallington, Surrey.

- 1883 \*Matthews, Charles George, 31, Stapenhill Road, Burton-on-Trent.
- 1911 Matthews, Charles Pask, B.A., B.Sc. (Lond.), 10, Hilda Street, Barry, Glam. (Captain, R.A.M.C.)
- 1987 Matthews, Francis Edward, Ph.D. (Göttingen), Aberdeen House, Flat No. 1, 211, Adelaide Road, Swiss Cottage, London, N.W. 3. [c. 1899-1902.]
- 1917 Maude, Aylmer Henry, Great Baddow, Chelmsford.
- 1910 Maudsley, Frank. B.Sc. (Vict.). 77, Woodgrove Road, Burnley; and Public Analyst's Office, Burnley.
- 1918 May, Percy, D.Sc. (Lond.), Organic Chemical Laboratory. South Parks Road. Oxford.
- 1880 McAlley, Robert, Bankside, Falkirk.
- 1919 McBain, James William, M.A. (Toronto), Ph.D. (Heid.), The University, Bristol.
- 1907 McCall, Thomas, The Government Chemical Laboratory, Brisbane, Queensland, Australia.
- 1918 McCandlish, David, 22, Ayresome Avenue, Roundhay, Leeds.
- 1906 McCombie, Hamilton, M.A. (Aberd.), A.R.C.S., B.Sc. (Lond.), Ph.D. (Strassburg), 39, Craven Road, Lancaster Gate, London, W. 2. (Major, Chemical Adviser: D.S.O.: mentioned in despatches.)
- 1906 McCrae, John, Ph.D. Heid, The Government Laboratories, P.O. Box 1080, Johannesburg, Transvaal, South Africa.
- 1894 McCubbin, William Alexander, Meeson House. Meeson. Wellington, Shropshire.
- 1918 McDavid, James Wallace, M.Sc. (Vict.), D.Sc. (Edin.), Messrs. Nobel's Explosives Co., Ltd., Ardeer, Stevenston, Ayrshire. (Captain, R.F.A.)
- 1915 McDonald, Donald, B.Sc. (Lond.), 95. Clarence Gate Gardens, Regent's Park, London, N.W. 1. (Lieut., General List.)
- 1881 \*McGowan, George, Ph.D. (Leipzig), 21, Montpelier Road, Ealing, London, W. 5. [c. 1908-11; v.p. 1911-14; @. 1914-15.]
- 1917 \*McHugo, Christopher William. 35, Warrior Square. Southend-on-Sea.
- 1916 McKenzie, Professor Alexander, M.A., D.Sc. (St. Andrews), Ph.D. (Berlin), F.R.S., University College, Dundee.
- 1893 McKerrow, William James, D.Sc. (Tübingen).
- 1905 McLellan, Basil Gordon, co Messrs. Rowntree & Co., Ltd., The Cocoa Works, York,
- 1902 McMullan, Charles, 7, William Street, South, Belfast.
- 1915 McRae. John Alexander, M.A. (Queen's, Toronto), Department of Chemistry, Queen's University, Kingston, Ontario, Canada.
- 1887 \*Meanwell. Charles Wright, 15, Woodlands Crescent, Muswell Hill Road, London, N. 10.
- 1901 Meggitt, Loxley, 12, Teakle Street, Summer Hill. Sydney, N.S.W., Australia.

- 1895 Melland, Godfrey, M.Sc. (Vict.), A.R.S.M., The Chemical Department, The Polytechnic, Woolwich, London, S.E. 18.
- 1904 Melling, Samuel Ernest, Bank House, The Cliff, Higher Broughton, Manchester,
- 1888 Mellon, William Warnock, Woodlands, Avoca Avenue, Blackrock, co. Dublin.
- 1892 Mercer, Thomas, 32, Gwydyr Mansions, Hove, Sussex. (Lieut., Hants, Regt.)
- 1905 Merrett, William Henry, A.R.S.M., Hatherley, Grosvenor Road, Wallington, Surrey. (Major. R.E.; Territorial Decoration.)
- 1909 Merritt, Ewart Herbert, B.Sc. (Lond.), Coten Lodge, Warwick.
- 1914 Messel, Rudolph, Ph.D. (Tübingen), F.R.S., 147, Victoria Street, London, S.W. 1.
- 1917 Methley, Bernard Willoughby, Ferndale, Moorgate, Rotherham, Yorks.
- 1918 Michie, Arthur Cumming, D.Sc. (Aberd.), 77, Rosebury Crescent, New-castle-on-Tyne.
- 1907 Micklethwait, Miss Frances Mary Gore, M.B.E., A.R.C.S. (Lond.), 17, St. Mary's Terrace, Paddington, London, W. 2; and The Research Laboratories, Boots Pure Drug Co., Island Street, Nottingham.
- 1880 Midwinter, Edward James Henry, Lic. Faculty of Phys. and Surgs. (Glas.), L.S.A. (Lond.), 187, Gleneldon Road, Streatham, London, S.W. 16.
- 1900 Millar, James Hill, D.Sc. (Birm.', St. James's Gate Brewery, Dublin.
- 1887 \*Miller, Alexander Kenneth, Ph.D. (Würzburg), Kilvert's Buildings, Withy Grove, Manchester.
- 1911 Miller, Lieut.-Colonel Alfred, M.B. (Lond.), L.R.C.P., M.R.C.S. (Eng.). 38, Montpelier Terrace, Cheltenham.
- 1897 Miller, James, 53, Newlands Road, Glasgow.
- 1910 Miller, James, The Rockeries, Horsforth, near Leeds.
- 1918 Miller, James McPherson, M.Sc. (Manc.), 22, Cleveland Road, Edgerton, Huddersfield, Yorks.
- 1918 Millin, David, B.A. (Cape of Good Hope), P.O. Box 809, Johannesburg, Transvaal, S. Africa.
- 1917 Millington, John Price, M.A. (Cantab.), B.Sc. (Wales), 80, Cambridge Gardens, London, W. 10.
- 1903 Mills, Charles, L.D.S. (Eng.), A.C.G.I., Post Office, Box 112, Kroonstad O.F.S., South Africa; and c/o G. Mills, Esq., The Maples, Balham London, S.W.
- 1878 \*Mills, Professor Edmund James, D.Sc. (Lond.), Hon. LL.D. (Glas.) F.R.S., 64, Twyford Avenue, West Acton, London, W. 3. [c. 1877-85, 94-97; v.-p. 1904-07; e. 1883-87, 88-92.]
- 1918 Mills, William Sloan, M.A., D.Sc. (R.U.I.), Messrs, Levinstein, Ltd., Ellesmere Port, near Chester.
- 1900 Mingaye, John Charles Henderson, Chemical Laboratory, Department of Mines and Agriculture, Sydney, N.S.W., Australia.

- 1901 \*Mitchell, Albert Henry, B.Sc. (Lond.), Borough Analyst's Laboratory, Hensleigh Road, Tiverton, Devon.
- 1897 Mitchell, Charles Ainsworth, M.A. (Oxon.), c/o Messrs. Beaufoy & Co., 87, South Lambeth Road, London, S.W. 8.
- 1918 Mocatta, Miss Ethel Grace, B.Sc. (Lond.), 49, Hamilton Terrace, London, N.W. 8.
- 1916 Moir, James, M.A., D.Sc. (Aberd.), 48, Ditton Avenue, Auckland Park, Johannesburg; and Government Laboratory, Johannesburg, S. Africa.
- 1909 Monier-Williams, Gordon Wickham, O.B.E., M.A. (Oxon.), Ph.D. (Freiburg), Lower Farm, Stoke D'Abernon, Surrey. (Major, Chemical Adviser; M.C.) [c. 1912-15.]
- 1919 Moodie, William Ewing, Avenue Cottage, Alexandria, Scotland.
- 1898 \*Moor, Cresacre George, M.A. (Cantab.), 30, Great James Street, Bedford Row, London, W.C. 1, (Captain, R.A.M.C.)
- 1888 Moore, Charles Clifton, Reddish House, Lymin, nr. Warrington, Lancs.
- 1918 Moore, Charles Watson, M.Sc. (Manc.), Ph.D. (Munich), Grappenhall Cottage, Grappenhall, Cheshire.
- 1917 Moore, Harold, O.B.E., B.Sc. (Lond.), Lindsey House, Lloyd's Place, Blackheath, London, S.E. 3.
- 1902 Moore, William, c/o Messrs, Grindlay & Co., Bombay.7
- 1916 More, Andrew, A.R.C.S. (Lond.), Ellesmere, King's Road, Walton-on-Thames. [c. 1919-.]
- 1901 \*Morgan, Professor Gilbert Thomas, D.Sc., A.R.C.S. (Lond.), F.R.S., Finsbury Technical College, Leonard Street, Finsbury, London, E.C. 2. [c. 1916-19; v.-p. 1919-.]
- 1900 Morgan, John James, "Lyndhurst," Western Road, Flixton, Lanes.
- 1888 Moritz, Edward Ralph, Ph.D. (Göttingen), 45, Great Tower Street, London, E.C. 3.
- 1887 \*Morley, Henry Forster, M.A., D.Sc. (Lond.), 5, Lyndhurst Road Hampstead, London, N.W. 3. [c. 1892-95.]
- 1914 Morrell, George Francis, Ph.D. (Kiel), B.Sc. (Lond.), 23, Finchley Way, Finchley, London, N. 3.
- 1917 \*Morrell, Robert Selby, M.A. (Cantab.), Ph.D. (Wiirzburg), Tor Lodge, Tettenhall Wood, Wolverhampton.
- 1915 \*Morris, Robert Leitch, 24, Wilbury Villas, Hove, Sussex.
- 1915 Moss, Henry Webster, A.R.C.S.I., British Dyes, Ltd., Huddersfield, Yorks
- 1880 \*Moss, Richard Jackson, Laboratory, Royal Dublin Society, Dublin; and St. Aubyn's, Ballybrack, co. Dublin.
- 1918 Mott. Owen Edwin, O.B.E., Ph.D. (Heid.), Turley House. Bleakhouse Road, Warley, Langley, Worcester.
- 1888 Moul, Frank, Aldersgate Chemical Works, Southall, Middlesex; and 5, Blakesley Avenue, Ealing, London, W. 5.

#### FELLOWS.

- 1896 Mousley, Frank, A.R.S.M., Burns Bay Road, Longueville, Sydney, N.S.W., Australia.
- 1909 Mummery, William Rest, c'o Messrs, Joseph Nathan & Co., Ltd., Queen Street, Palmerston North, New Zealand.
- 1888 \*Munro, John May Herbert, D.Sc. (Lond.), M.R.C.S. Eng., L.R.C.P. (Lond.), 12, Grosvenor Place, Bath.
- 1911 Murphy, Paul, c'o Dr. Murphy, Beck Hall, Pickering, Yorkshire. (Major, R.E.)
- 1919 Murray, Thomas Jenkins, Ph.D. (Leipzig), M.Sc. (Birm.), Municipal Technical School, Wolverhampton. (Assistant Chemical Adviser.)
- 1878 Muspratt, Edmund Knowles, Hon. I.L.D. (Liv.), 5, Windser Buildings. George Street, Liverpool. [c. 1897-98.]
- 1899 Muter, Alexander Henry Mitchell, 325, Kennington Road, London, S.E. 11,

## N

- 1915 Nag. Professor Nagendra Chandra, M.A. (Calcutta). Bose Institute, 93, Upper Circular Road, Calcutta, India.
- 1917 Napper, Sidney Scrivener, A.C.G.I., co Messrs, Courtaulds, Ltd., 9, Park Hill, Clapham, London, S.W. 4.
- 1901 Nash, Leonard Myddelton, Westlands, Princess Road, Finsbury Park, London, N. 4. (Captain, Gloucestershire Regt.)
- 1918 Naunton, William Johnson Smith, M.A. (Cantab), M.Sc. (Lond.), Dip. Chem. (Munich), c/o Messrs. Levinstein. Ltd., Blackley, Manchester.
- 1910 Naylor, Ernest Brooks, M.Sc. (Vict.), Eversleigh, Gathurst, near Wigan.
- 1915 \*Naylor, Jonathan Harold, M.Sc. (Manc.), 1, Park Avenue, Widnes, Lancs.
- 1887 \*Naylor, William Arthur Harrison, 22-30, Graham Street, City Road, London, N. 1.
- 1918 Nesbitt, Cosby Thomas, A.R.S.M., 11, Montrose Road, Sheffield.
- 1877 Nevill, Edmund Neville, F.R.S., Ellaker, Enys Road, Eastbourne.
- 1909 Neville. Henry Allen Dugdale. B.Sc. (Lond.), M.A. (Cantab.), The Agricultural Laboratories, The University, Cambridge. (Captain. R.E.)
- 1918 Newbery, Edgar, B.Sc. (Lond.), D.Sc. (Vict.). The University, Cape Town.
- 1918 Newman, Leslie Frank, M.A. (Cantab.), Downing College, Cambridge. (Captain, R.A.S.C.)
- 1878 \*Newth, George Samuel, Post Office, Folkestone.
- 1888 Newton, William, Ph.D. (Ziirich).

#### FELLOWS.

- 1914 \*Nicholls, John Ralph, B.Sc., (Lond.), 1a, Hillfield Gardens, Muswell Hill, London, N. 10: and Government Laboratory, Clement's Inn Passage, Strand, London, W.C. 2.
- 1878 'Nicholson, Lieut.-Col. Edward, M.R.C.S. (Eng.), L.S.A. (Lond.), D.P.H (Cantab.), 6, Avenue Gilly, Nice, France.
- 1887 Nicol, William Walker James, M.A., D.Sc. (Edin.), 15, Blacket Place, Edinburgh. [e. 1888-92; c. 1903-06.]
- 1915 Nind, Edmund Robert, Pound House, near Hallow, Worcester.
- 1898 Nolan, Harold, M.D., LL.D. (Lond.), Bio-chemist, Western Pennsylvania Hospital, Pittsburgh, Pa., U.S.A.
- 1918 Nolan, Thomas Joseph, B.A. (R.U.I.), D.Sc. (N.U.I.), 5, Sandhills, Stevenston, Ayrshire.
- 1912 Norman, George Marshall, A.R.C.S. (Lond.), B.Sc. (Lond.). 2. New Road Avenue, Chatham, Kent. (Captain, R.A.O.C.)
- 1916 Norris, Roland Victor, M.Sc. (Mane.), D.Sc. (Lond.), Office of the Government Agricultural Chemist, College of Agriculture and Research Institute, Coimbatore, S. India. (2nd Lieut., Mahrattas.)
- 1897 \*Norris, Thomas Henry, Finsbury Technical College, Leonard Street, City Road, London, E.C. 2.
- 1917 Norris, William Henry Hobbs, B.A. (Cantab.), B.Sc. (Lond.). Glerum House, 18, Allfarthing Lane, Wandsworth Common, London, S.W. 18. (Lieut., R.E.; Military Medal.)
- 1917 North, Barker, A.R.C.S., 33. Ashgrove, Bradford. Yorks.
- 1904 \*Northall-Laurie, Dudley, 41, Lyncroft Gardens, London, N.W. 6. [c. 1916-19.]
- 1905 Nuttall, Walter Harold, 70, St. George St., Hillhead, Glasgow. (Lieut., R.A.O.C.)

## 0

- 1892 Oddy, Robert Walter, Abbey Street, Toad Lane, Rochdale.
- 1878 \*Odling, Walter, co Messrs, Bass, Ratcliff & Gretton, Ltd., Burton-on-Trent.
- 1878 \*Odling, Professor William, M.A. (Oxon.), M.B. (Lond.), F.R.C.P. (Lond.), Hon. Ph.D. (Leyden, F.R.S., 15, Norham Gardens, Oxford. [v.-p. 1877-83, 88-91; P. 1883-88; C. 1878-80, 82-91.]
- 1917 O'Farrelly, Alfons. M.A. (R.U.I.), 26, Highfield Road, Rathgar, Co. Dublin.
- 1910 Okell, Frederick Leigh. c o The Straits Trading Co., Ltd., Singapore, Straits Settlements,
- 1918 Oldroyd, Rowland Ernest, Park Road, Rochdale.
- 1919 O'Neill, Charles, 17. King's Drive, Heaton Chapel, nr. Stockport.
- 1917 Orange, Lionel, B.Sc. (Lond.), 148, Barkworth Road, North Camberwell. London, S.E. 16.
- 1903 \*Orton, Professor Kennedy Joseph Previté, M.A. (Cantab.), Ph.D. (Heidelberg), Old Buildings, University College of North Wales, Bangor. [c. 1908-11.]

#### FELLOWS.

- 1909 O'Shaughnessy, Bernard, A.R.C.S. (Lond.). Central Technical Institute, Waterford.
- 1904 O'Shaughnessy, Francis Richard, A.R.C.S. (Lond.), Denman Chambers. 42, Temple Street, Birmingham. [c. 1914-17.]
- 1918 \*O'Shea, Professor Lucius Trant, M.Sc. (Lond.), 30, Whitworth Road, Ranmoor, Sheffield.
- 1888 \*Ostersetzer, Julius, Messrs. Goulding's Works, North Wall, Dublin.
- 1887 O'Sullivan, James, High Bank, Burton-on-Trent.

## P

- 1878 Packer, George Smithers.
- 1895 Page, Professor Hastings Montague, Government College of Science Poona, India.
- 1909 Page, Reginald Percival, Chemical Laboratory, 16, Arundel Street, Portsmouth. (2nd Lieut., Hants. Regt.)
- 1906 Paine, Sydney Gross, D.Sc. (Lond.), Imperial College of Science and Technology, South Kensington, London, S.W. 7.
- 1904 Pakes, Walter Charles Cross. M.R.C.S. (Eng.), L.R.C.P. (Lond.), D.P.H. (Cantab.), Frankfort, Orange Free State Province, South Africa; and 71. Biscot Road, Luton. Beds. (Captain. South African Field Ambulance.)
- 1918 Palmer, William Josiah, 25, Beechhill Road, Eltham, Kent.
- 1909 Parker, James Gordon, Ph.D. (Strassburg), "Scotseraig," Beaconsfield Road, Blackheath, London, S.E. 3.
- 1916 Parker, Professor Matthew Archibald, B.Sc. (Glas., The University of Manitoba, Winnipeg, Canada,
- 1905 Parker, William Bayley, 1, Murray Road, Rugby.
- 1901 \*Parkes, Albert Edward, Chemical Laboratory, 43, Whitehorse Street. Stepney, London, E. 1.
- 1896 Parry, Ernest John, B.Sc. (Lond.), Barrister-at-Law (Gray's Inn., Thanet House, 56, Great Dover Street, London, S.E. 1.
- 1905 Partridge, William, 30, Great James Street, Bedford Row, London, W.C. 1.
- 1918 \*Passmore, Francis William, Ph.D. (Würzburg), 81, Queen Victoria Street, London, E.C. 4.
- 1919 Paterson, John Hamilton, D.Sc. (Dun.), 3. Park Villas, The Green, Wallsend-on-Tyne.
- 1912 Patrick, Osear James, B.Sc. (Lond.), Guyhirne, Seal Hollow Road. Sevenoaks, Kent.
- 1903 \*Paul, James Hugh, B.Sc. (Lond.), 11, Glenluce Road, Blackheath. London, S.E. 3.
- 1857 Paul, Lewis Gordon, Ph.D. (Tübingen), Borough Laboratory, Market Hall Chambers, Huddersfield.

- 1913 \*Paulley, William Minterne, B.A. (Cantab.), Redlands, Bath Road, Worcester. (Durham Light Infantry.)
- 1891 Pauls, Charles Alfred, M.Sc. (Vict.). Epworth College, Rhyl.
- 1917 Peachey, Stanley John, M.Sc.Tech. (Vict.), 5, Yew Tree Road, Davenport, near Stockport.
- 1917 Peacock. David Henry, B.A. (Cantab.), B.Sc. (Lond.), 5, Virginia Road, Marsh, Huddersfield.
- 1918 Pearson, Archibald Ramsden, B.Sc., A.R.C.S. (Lond.). The Government Laboratory, Clement's Inn Passage, Strand, London, W.C. 2.
- 1900 \*Peck. Ernest Lawrence, B.Sc. (Vict.), Ph.D. (Jena). Edgeworth, Bebington, Cheshire.
- 1918 Peddle, Cyril James, M.Sc. (Sheff.), Ravenscliffe, Turnditch, nr. Derby.
- 1909 Pelly, Russell George, 3, Wingate Road, Hammersmith, London, W. 6.
- 1887 Perkin, Arthur George, F.R.S., Grosvenor Lodge, Grosvenor Road, Leeds.
- 1911 Perkin, Frederick Mollwo, Ph.D. (Würzburg), Albion House, 59. New Oxford Street, London, W.C. 1.
- 1918 \*Perman, Edgar Philip, D.Sc. (Lond.), University College. Cardiff.
- 1897 Perry, George Henry, M.B.E. B.Sc., A.R.C.S. (Lond.), Directorate of Chemical Inspection, Royal Arsenal, Woolwich, London, S.E. 18. [c. 1918-.]
- 1905 Peters, William Harold, Metropolitan Carriage, Wagon and Finance Co., Ltd., Saltley, Birmingham.
- 1912 Petrie, Alexander Swanston, c/o Gibson, Rosslyn, 154, Vicarage Road, Langley, Birmingham.
- 1914 Petrie, George Campbell. co The Mexican Eagle Oil Co., Minatitlan, Port of Mexico.
- 1903 Petrie, James Mathew, D.Sc. (Sydney), The University, Sydney, N.S.W., Australia.
- 1888 Pettigrew, John, 7, Victoria Street, Westminster, London, S.W. 1.
- 1887 Philip. Arnold, B.Sc. (Lond.). A.R.S.M., The Chemical Department, H.M. Dockyard, Portsmouth.
- 1919 Philip, James Charles, O.B.E., M.A., D.Sc. (Aberd.), Ph.D. (Gottingen).

  The Imperial College of Science and Technology, London.
  S.W. 7.
- 1919 Phillips, Henry Ablett, Royal Gunpowder Factory. Waltham Abbey. Essex.
- 1913 \*Phillips, Professor Percy Philip, Ph.D. (Göttingen). Rurki. United Provinces, India.
- 1916 Pickard, Joseph Allen, B.Sc., A.R.C.S. (Lond.), 21, Rosemont Road, Acton, London, W. 3.
- 1902 \*Pickard, Robert Howson, D.Sc. (Lond.), Ph.D. (Munich). B.Sc. (Birm.), F.R.S., Billinge View, Blackburn.

## Date of

- 1887 Pickering, Percival Spencer Umfreville, M.A. (Oxon.), F.R.S., Harpenden, Herts,
- 1895 Pickford, Samuel. A. R.C.S.I., Church Road, Leyland, Preston.
- 1917 Picton. Norman, B.Sc. (Wales), Ph.D. (Leipzig), 12, Sorbie Road, Saltcoats, Ayrshire.
- 1893 'Pike. Alfred Edridge, c.o. Messrs. Doulton & Co., Ltd., Royal Doulton Potteries, Lambeth, London, S.E. 1.
- 1891 Pilkington, George. The Conservative Club, Broad Street, Bury, Lancs.
- 1904 \*Pinchin, Ernest Alfred, B.Sc. (Lond.), 4. Gleneldon Road, Streatham, London, S.W. 16.
- 1918 Pinnock, Henry Tremayne, M.A. (Oxon.), 11, Fountain Road, Edghaston, Birmingham.
- 1907 Pizey, James Henry, A.R.C.S. (Lond.), 38, Lewisham Road, Dartmouth Park, London, N.W. 5.
- 1894 Platts, John Charles, 64, St. James' Street, Longueuil, P.Q., Canada.
- 1909 Pollard, William, M.A. (Cantab.), D.Sc. (Tabingen), Oakfield, Hitchin,
- 1914 Pollock, Ernest Ferguson, Ph.D. (Jena), 22, Osborne Road, Huddersfield.
- 1914 Pool, George Erskine, B.Sc. (Lond.). The Laboratory, Consett Iron Co., Ltd., Consett, Co. Durham.
- 1911 Poole, Evan Skull, B.Sc. (Lond.), I.O.O.'s Office, 22. Nicholas Street. Chester. (Captain, R.A.O.C.)
- 1918 Pepe, Rupert William, B.Sc. (Lond.), 10, Malpas Road, Brockley, London, S.E. 4.
- 1903 Pope, Thomas Henry, B.Sc. (Birm.), A.C.G.I., 2, Belmont Street, Hillhead, Glasgow.
- 1899 Pope, Professor Sir William Jackson, K.B.E., Hon, M.A. (Cantab.), M.Sc. Tech. (Manc.), F.C.G.I., F.R.S., Holmsdale, Brooklands Avenue, Cambridge; and The University, Cambridge. [c. 1903-06, 09-12; e. 1913-19.]
- 1911 Porritt, Benjamin Dawson, M.Sc. (Lond.), 64. Strathearn Road, Edinburgh. [c. 1919-.]
- 1887 Porter, Herbert, "Ravenscroft," Gateacre, Lancs.
- 1918 Porter, James Walker, A.R.C.S.I., 41, Rectory Road, Crumpsall, Manchester.
- 1916 Potter, Francis Martin, M.B.E., B.Sc., A.R.C.S. (Lond.), Tar and Ammonia Products Works, Gas Light and Coke Co., Beckton, Essex. (Corporal, London Scottish.) [c. 1918-.]
- 1917 Potter, Howard Vincent, B.Sc. (Lond.), The Cottage, Wootton Wawen, Birmingham,
- 1915 Pratt, Walter Ryley, B.Sc. (Lond.), 7. Orchard Road, Barnet, Herts.
- 1915 Prescott, William George. B.Sc. (Lond.), c o La Forestal, Ltda, Villa Guillermina, F.C.S.F., Ramal al Rey, Prov. de Santa F., Argentine Republic.

#### FELLOWS.

- 1905 Price, Thomas Slater, O.B.E., D.Sc. (Lond. and Birm.), Ph.D. (Leipzig), Municipal Technical School, Birmingham; and Corris, Manley Hill Road, Sutton Coldfield, Warwickshire. [e. 1907 11: c. 1911-14.] (Lieut.-Commander, R.N.V.R.)
- 1919 Prideaux, Edmund Brydges Rudhall, M.A., B.Sc. (N.Z.), D.Sc. (Lond.), 6, Arboretum Street, Nottingham.
- 1905 Priest, Martin, (Captain, R.A.M.C.)
- 1891 \*Procter, Professor Henry Richardson, D.Sc., Hon.M.Sc. (Leeds), The University, Leeds. [c. 1902-04.]
- 1887 \*Proctor, Charles, Government Laboratory, Clement's Inn Passage, Strand, London, W.C. 2. [c. 1910-i3.]
- 1902 Purvis, John Edward, M.A. (Cantab.), A.R.C.S.I., The University Chemical Laboratory, Cambridge.

## Q

1895 \*Quinn, James Cardwell, M.Sc. (Manc.).

## R

- 1908 Race, Joseph, Civic Laboratories, co Mansion House, Hereford. (Captain, Canadian Army Hydrological Corps and Adviser on Sanitation.)
- 1918 Radcliffe, Lionel Guy, M.Sc. Tech. (Manc.), 929, Chester Road, Stretford, Manchester.
- 1893 Radulowitz, Dragomir Woin, Belgrade, Serbia.
- 1897 \*Ralston, William, B.Sc. (Lond.), 113, Canfield Gardens. Hampstead, London, N.W. 6.
- 1893 Ramage, Hugh, M.A. (Cantab.), A.R.C.S.I., The Technical Institute, Norwich.
- 1905 Ramsay, William, 23, Sycamore Road, Higher Tranmere, Birkenhead.
- 1918 Raper, Henry Stanley. D.Sc. (Vict.), The School of Medicine, Thoresby Place, Leeds. (Lieut.-Colonel, R.E.)
- 1916 Rawling, Francis George, M.Sc. (Leeds), c/o The West Virginia Pulp and Paper Co., Piedmont, Virginia, U.S.A.
- 1910 Rawlins, Henry James Bawtree, B.Sc. (Lond.), 263, London Road, Thornton Heath, London, S.W. 16.
- 1888 \*Rawson, Christopher, 22, Cumberland Street, Manchester.
- 1888 Ray, William, 59, Haydn Avenue, Parker Street, Whitworth Park, Manchester.
- 1915 Rayner, Archibald, B.Sc. (Lond.), 45, Gilpin Avenue, East Sheen, London, S.W. 14.
- 1895 \*Read, Professor Arthur Avery, D. Met. (Sheffield), University College, Newport Road, Cardiff.

- 1901 \*Read, Edwin James, B.A. (Cantab.), c o The Pretoria Portland Cement Co., Ltd., P.O. Box 405, Pretoria, S. Africa.
- 1913 Read, William John, M.Sc. (Manc.), The Bryn, Queen's Road, Westonsuper-Mare. (Captain, R.A.M.C.; mentioned in despatches.)
- 1919 Redpath, George Christie, 76, Eastbourne Gardens, Monkseaton, Northumberland.
- 1918 Rée, Alfred, Ph.D. (Berne), 15, Mauldeth Road, Withington, Manchester.
- 1886 Reed, Lester, Hyrsthof, South Park Hill Road, South Croydon,
- 1911 Reed, Walter William, M.Sc. (Wales), The Technical Institute, Norwich.
- 1890 \*Reeks, Trenham Howard, A.R.S.M., 106, Queen Victoria Street, London, E.C. 4.
- 1917 Rees, Walter James, Department of Applied Science, St. George's Square, Sheffield.
- 1912 Reeve, Howard Teesdale, 38, N. Burnett Street, E. Orange, N.J., U.S.A.
- 1914 Reid, John Fountain, Hazeldene, Forest Road, Melksham, Wilts.
- 1888 \*Reid, Walter Francis, Fieldside, Addlestone, Surrey.
- 1880 Rennie, Professor Edward Henry, D.Sc. (Lond.), University of Adelaide. South Australia.
- 1918 Renwick, Frank Forster, Sunnyside, Weald Road, Brentwood, Essex.
- 1917 Revis, Cecil, A.C.G.I., 94, Station Road, Barnes, London, S.W. 13.
- 1915 Reynard, Otto, B.A. (Cantab.), 47, Kent Road, Harrogate.
- 1917 Reynolds, William Colebrook, B.Sc., A.R.C.S. (Lond.). Wharfedale, Upminster, Essex.
- 1908 'Rhead, Ezra Lobb, M.Sc. Tech. (Manc.), Sunnyside, Polygon Avenue, Levenshulme, Manchester; and The College of Technology, Manchester.
- 1899 Rhodin, John Gustaf Adolf, 43, Alwyn Avenue, Chiswick, London, W. 4.
- 1912 Richards, Eric Hannaford, B.Sc. (Lond.), Lawes Agricultural Trust, Rothamsted Experimental Station, Harpenden.
- 1894 'Richards, Percy Andrew Ellis, Royal Dental Hospital, Leicester Square, London, W.C. 2; City Hall, Westminster, London, S.W. 1; and Town Hall, Hammersmith, London, W. 6. [c. 1901-04, 1915-18; e. 1911-15.]
- 1897 \*Richardson, Frederic William, Oak Lea, Menston, Yorks.
- 1887 Richmond, Henry Droop, 5, Russell Place, Talbot Street, Nottingham. [c. 1906-09, 10-13.]
- 1905 Richmond, Sylvester Oliffe, Inspector of Victualling Stores, Royal William Yard, Plymouth; and Oliffe House, Compton Park Road, Mannamead, Plymouth. [c. 1913-15.]
- 1918 \*Rideal, Eric Keightley, M.B.E., B.A. (Cantab.), Ph.D. (Bonn), 28. Victoria Street, London, S.W. 1. (Lieut., General List.)
- 1878 \*Rideal, Samuel, D.Sc. (Lond.), 28, Victoria Street, Westminster. London, S.W. 1. [c. 1899-1902.]
- 1887 \*Ridsdale, Charles Henry, 3, Wilson Street, Middlesbrough, Yorks.

- 1894 \*Rigby, William Thomas, County Analyst's Laboratory, 14, Temple Street, Birmingham.
- 1907 Riley, Louis John Eczekiel, 8, Newton Road, London, W. 2.
- 1913 Riley, William Albert, Brackley Laboratory, Little Hulton, near Bolton, Lancs.
- 1903 \*Rintoul, William, O.B.E, "Lauriston," Ardrossan, Ayrshire. [c. 1917-.]
- 1919 Ritchie William Stonebridge, B.Sc. (Lond.), 8, West Graham Street, Glasgow. (R.N. Experimental Station.)
- 1918 Rixon, Frederic William, M.Sc. (Vict.), Ph.D. (Giessen), 93, Cromwell Road; and The University, Bristol.
- 1915 Robb, Marshall Jeffreys, B.Sc. (Aberd.), Westbank, Fouthill Road, Aberdeen.
- 1918 Roberts, Caryl Cameron, M.A. (Cantab.), 19, Watling Street, Canterbury.
- 1916 Roberts, Oswald Digby, Highlands, Streatham Common, London, S.W. 16.
- 1915 Roberts, Walter Morrell, M.Sc. (Manc.), The Cedars, Whalley Range, Manchester.
- 1905 Roberts, William Henry, M.Sc. (Vict. and Liv.), Public Analyst's Department. City Laboratories, Mount Pleasant, Liverpool. [c. 1915-18.]
- 1904 Robertson, Andrew John, D.Sc. (St. Andrews), c/o Messrs, J. & J. White, Shawfield Chemical Works, Rutherglen, near Glasgow.
- 1897 Robertson, Sir Robert, K.B.E., D.Sc., M.A. (St. Andrews), F.R.S., Research Department, Royal Arsenal, Woolwich, London, S.E. 18.

  [c. 1915-18; v.-p. 1918-.]
- 1919 Robertson, Joseph Gold, Ph.D. (Jena), 19, Broomhill Terrace, Partick, Glasgow.
- 1902 Robins, Walter, B.Sc. (Lond.). Lyme House. Grove Hill, Woodford, Essex.
- 1917 Robinson, Charles Stanley, B.A. (Cantab.). Cape Explosives Works, Ltd., 15, St. Swithin's Lane, London, E.C. 4.
- 1916 Robinson, Frederic, M.Sc.Tech. (Manc.), B.Sc. (Lond.), The Hollies, Mile End, Stockport.
- 1887 \*Robinson, Henry Haliburton, M.A. (Oxon.), 42. Penywern Road, Earl's Court, London, S.W. 5.
- 1918 Robinson, Professor Robert. D.Sc. (Manc.). Lance House. Childwall Road, Wavertree, Liverpool.
- 1908 Robison, Robert, B.Sc. (Lond.), Ph.D. (Leipzig), 78, Primrose Mansions, Battersea Park, London, S.W. 11. (Captain, R.A.M.C.; mentioned in despatches.)
- 1893 \*Robson, James, Allan Park, Inellan, Scotland.
- 1917 Rodger, Robert, 4, Stevenage Road, Bishop's Park. Fulham, London, S.W. 6.
- 1896 Rogers, George Joseph, A.R.C.S. (Lond.), 32, Chudleigh Road, Brockley, London, S.E. 4.
- 1904 Rogers, John. O.B.E., c/o Messrs, Nobel's Explosives Co., Ltd., West George Street, Glasgow.

#### FELLOWS

- 1908 Rogers, William David, A.R.C.S., B.Sc. (Lond.), 430. Wellington Road North, Heaton Chapel, Stockport.
- 1911 Rolfe, Robert Thatcher, c.o Messrs, W. H. Allen, Son & Co., Ltd., Queen's Engineering Works, Bedford.
- 1919 \*Romanes, John William, B.Sc. (Edin.), 13, Merchiston Avenue, Edinburgh.
- 1919 Roos, Charles Bernard, B.Sc. (Lond.), 26, Heathdene Road, Streatham, London, S.W. 16, (Captain, R.E.)
- 1916 Rose, Sir Thomas Kirke, A.R.S.M., D.Sc. (Lond.), Royal Mint, London, E. 1; and Ashdown, Northwood, Middlesex.
- 1898 \*Ross, Arthur, I, Glengall Road, Old Kent Road, London, S.E. 15.
- 1897 Ross, Raymond St. George, Public Analyst's Office, Burnley, Lanes. (Major, East Lanes, Regt.).
- 1897 Rossiter. Edmund Charles, A.C.G.I., Brougham. West Hagley, Worcestershire.
- 1917 Rotter, Godfrey, O.B.E., B.Sc. (Wales). Mountside, Upton Road, Bexley Heath, Kent.
- 1891 \*Rowden. William Clement, A.R.S.M., 9, Clifton Road, Newcastle-on-Tyne.
- 1913 Rowe, Walter Tidd, Department of Chemistry, Victoria Square West, Adelaide, South Australia.
- 1889 Rowland, James Scott, 89, Stacey Road, Roath, Cardiff.
- 1888 Ruddock, Frederick Grevile, Corporation Street, Warrington.
- 1885 Ruffle, John. M.R.A.C., Musley, Ware, Herts. [c. 1898-1901.]
- 1919 Rule, Alexander, M.Sc. (Vict.), Ph.D. (Jena). Propellants Branch.
  Ministry of Munitions of War, Storey's Gate, Westminster,
  London, S.W. 1.
- 1888 Rumble, Charles, 169, Gleneldon Road, Streatham, London, S.W. 16.
- 1898 \*Russell, Edward, B.Sc. (Lond.), 28, Apsley Road, Clifton, Bristol; and 18, Prince Street, Bristol.
- 1888 Kussell, William, Chemistry Department, Municipal Technical School, Suffolk Street, Birmingham.
- 1904 Ryan, Hugh, M.A., D.Sc. (R.U.I.), St. Brendan's. Cross Avenue, Booterstown, Co. Dublin.
- 1909 Ryffel, John Henry, M.A. (Cantab.), B.Sc. (Lond.), Guy's Hospital, London, S.E. 1; and 10, Grasmere Road, Muswell Hill, London, N. 10. (Lieut., O.T.C., Medical Section.)

## S

- 1900 Sage, Charles Edward, 10, London Street, Fenchurch Street, London, E.C. 3.
- 1916 Sageman, Philip John, 65, Anson Road, Tufnell Park, London, N. 7.

- 1896 Salmon, Edgar Henry Rider, Pharmacia Salmon, Santo Eugenio Estado Oriental, Uruguay viâ Monte Video); and 70, Kenninghall Road, Clapton, London, E. 5.
- 1912 Salter, Charles, A.R.C.S. (Lond.), A.R.S.M., Straits Trading Co., Ltd., Singapore,
- 1878 \*Salter, Mortyn John, Grevrick House, Mickleton, Glos.
- 1896 Sanderson, John, c'o Messrs, Arthur Johnson, Ltd., Britannia Pencil Works, Neasden Lane, London, N.W. 10.
- 1888 \*Saul, John Edward, Black Warren, Radlett, Herts.
- 1911 Sawbridge, Bartle Frere, M.A. (Oxon.), 75, Abingdon Road, Kensington, London, W. 8. (2nd Lieut., London Regt.)
- 1897 Sawers, William Duncan, Woodend, Eastwood, Giffnock, near Glasgow.
- 1888 \*Sayers. Joseph, Groundwell Manor, Blunsdon, near Swindon.
- 1899 Scard, Frederic Isenbart, The West India Committee Rooms, 15, Seething Lane, London, E.C. 3.
- 1888 Scarf, Isaac Sydney, City of London School, Victoria Embankment, London, E.C. 4: City of London College, Moorfields, London, E.C. 2; and 88, Palmerston Crescent. Palmer's Green, London, N. 13.
- 1900 \*Schack-Sommer, Gustaf Adolf Otto, Ph.D. (Heid.), 87, Victoria Street, London, S.W. 1.
- 1901 \*Schofield, James Alexander, A.R.S.M., The University, Sydney, N.S.W. Australia.
- 1916 Scholefield, Fred, M.Sc. (Vict.), B.Sc. (Lond. and Leeds), c'o Messrs.
  Burgess, Ledward & Co., Ltd. (Dyehouse Dept.). Walkden, Manchester.
- 1915 Schotz, Schachno Peisach, B.Sc. (Lond.), D.Sc.Tech. (Zurich), co-Mrs. Hawes, 37, Malmesbury Road, Bow, London, E. 3.
- 1902 \*Scott, Alexander, M.A., Sc.D. (Cantab.), D.Sc. (Edin., F.R.S., 34, Upper Hamilton Terrace, London, N.W. 8. [c. 1903-06.]
- 1900 \*Scott, Andrew Laidlaw, Royal Gunpowder Factory, Waltham Abbey, Essex.
- 1898 Scott-Smith, George Egerton, "Ashleigh." Bamford, Derbyshire.
- 1906 Scruton. Harold Adams. B.Sc. (Lond. and Leeds), Hill Crest, Elloughton. Brough, E. Yorks.
- 1893 Scrutton, Willis James Campbell, 18, Billiter Street, London, E.C. 3.
- 1895 \*Scudder, Frank, c'o The Mersey and Irwell Joint Committee, 44. Moseley Street, Manchester.
- 1910 Seaber, Willie Macro, B.Sc. (Lond.). Cia Mexicana de Petroles. El Aguila, S.A., Refineria de Minatitlan, Mexico.
- 1898 Seabrooke, Herbert Cecil, Black Ash, Grays, Essex.
- 1912 Self, Percy Arthur William, B.Sc. (Lond.), 53, St. Saviour's Road, Croydon, Surrey.
- 1915 Senter, George, D.Sc. (Lond.), Ph.D. (Leipzig), The Birkbeck College, Bream's Buildings, Chancery Lane, E.C. 4.
- 1895 Seyler, Clarence Arthur, B.Sc. (Lond.), Hindfell, Eaton Crescen, Swansea. [c. 1912-15.]

- 1880 Shadwell, John Emilius Lancelot, Milton House, Woodland Place, Bathwick Hill, Bath.
- 1917 Sharp, David Easton, B.Sc. (Aberd.', c'o Mrs. Caldwell, Blackford, Saltcoats, Ayrshire.
- 1889 Sharpley, William Pell, A.R.C.S.I., Prescot Vale, Cuthbert Post Office, Albany, Western Australia.
- 1898 Sharrott, Thomas Chilwell, A.R.C.S. (Lond.), B.A. (Dublin), Hackney Downs School, Clapton, London, E. 8.
- 1897 \*Shaw, George Elliott, B Sc. (Lond.), Mungpoo P.O., Riyang, D. H. Ry., India.
- 1905 Shedden, Frank, B.Sc. (Lond.), co Messrs. Courtaulds, Ltd., Flint, N. Wales.
- 1891 Shegog, Thomas Alexander, A.R.C.S.I., 12. Chestnut Street, Newark. N.J., U.S.A.
- 1899 Shelbourn, Edward Thomas. "Evington," Park Road, Hampton Hill, Middlesex; and Chemical Laboratory, Public Health Department, L.C.C., 2, Savoy Hill, Victoria Embankment, London, W.C. 2.
- 1908 Sheldon, John Charles, Ivy Cottage, New Oscott, Erdington, Birmingham.
- 1907 Sheldon, Norman Lindsay, Ph.D. (Heidelberg), Government Acetone Factory, Nasik Road, India.
- 1909 Shelley, Frederick Farey, Apothecaries' Hall, Blackfriars, London, E.C. 4.
- 1918 Shelton, Arthur John, A.C.G.I., 10, Park Road, Clydach S.O., Glam.
- 1913 \*Shelton, James, Batu Gajah, F.M.S.
- 1910 Shepheard, Frederick George, D.Sc. (N.U.I.), B.Sc., A.R.C.S. (Lond.), Chesterfield Villa, Victoria Avenue, Ockbrook, nr. Derby.
- 1905 Shepherd, Arthur Burton, B.Sc. (Vict.), co The British Oil and Cake Mills, Ltd., Copenhagen Oil Mills, Limehouse, London, E. 14.
- 1916 Shepherd. Evelyn Henry, B.Sc. (Lond.), The Laurels. 36. Green Lawn, Rock Ferry, Cheshire. (2nd Lieut., R.E.)
- 1878 \*Shepherd, Harcourt Henry Benjamin, 8, The Park, Sidcup.
- 1899 Shields, John, D.Sc. (Edin.), Ph.D. (Strassburg), 4. Stanley Gardens, Cricklewood, London, N.W. 2.
- 1918 Short, Andrew, B.Sc. (Dun.), 23, Hotspur Street, Tynemouth.
- 1890 Short, Frederick William, B.Sc. (Lond.), Sabi Mine, Shabani, S. Rhodesia.
- 1908 Shrewsbury, Herbert Sutcliffe, Government Laboratory, Port of Spain, Trinidad, B.W. Indies.
- 1889 Shutt, Frank Thomas, M.A., D.Sc. (Toronto), Chief Chemist, Experimental Farm, Ottawa, Canada.
- 1889 Siebold, Alfred, Hibernia Works, Henry Street, Tipperary.
- 1891 Silvester, Harry, Hon. B.Sc. (Birm.), Paradise Buildings, 36, Paradise Street, Birmingham. [c. 1917-.]
- 1909 Simmons, Robert, The Government Laboratory, Kingston, Jamaica. and Ashleigh, New Malden, Surrey.

- 1914 Simmons, Thomas Arthur, B.Sc. (Lond.), Ordnance, Constantinople, (Captain, R.A.O.C.)
- 1917 Simmons, William Herbert, B.Sc. (Lond.), 96, Victoria Street, Westminster, London, S.W. 1.
- 1916 Simonsen, Professor John Lionel, D.Sc. (Manc.), The Forest Research Institute and College, Dehra Dun, U.P., India.
- 1887 \*Simpson, William Selby, Wyndcroft, Old Park Road, Enfield.
- 1918 Sinnatt, Frank Sturdy, M.B.E., M.Sc.Tech. (Manc.), 321, Great Clowes Street, Higher Broughton, Manchester. (Captain, O.T.C.)
- 1887 Skelton, John Richard, The Homestead, Thorpe, Norwich.
- 1899 Skertchly, William Pearson, Kenwyn, Station Road, Borrowash, near Derby,
- 1917 Slade. Roland Edgar, D.Sc. (Manc.). 16, Clevedon Mansions, Lissenden Gardens, London, N.W. 5. (Captain, R.E.)
- 1888 Slater, Harold Humboldt, Casilla Correo 1475, Buenos Aires, S. America.
- 1904 Slator, Arthur, Ph.D. (Leipzig), D.Sc. (Lond. and Birm.), 174, Ashby Road, Burton-on-Trent.
- 1880 \*Slatter, George William, A.R.C.S.I., The Laurels, Knaresborough Road, Harrogate.
- 1918 Smeaton, Thomas Frederick. Royal Technical College, Glasgow. (Lieut., R.E.)
- 1884 \*Smetham, Alfred. 16, Brunswick Street, Liverpool. [c. 1898-1901, 05-08, 10-13.]
- 1916 Smiles, Samuel, O.B.E., D.Sc. (Lond.), F.R.S., Armstrong College, Newcastle-on-Tyne.
- 1881 \*Smith, Alfred Mica, School of Mines, Ballarat, Victoria, Australia.
- 1892 Smith, Angus, 7, Eldon Street, Greenock.
- 1911 Smith, Arthur Richard, M.Sc. (Manc.), 20, Upper Pembroke Street, Dublin. (Captain, R.A.O.C.)
- 1894 Smith, Claude, Barngarth, Cartmel, Grange-over-Sands.
- 1917 Smith, Ernest William, B.A., B.Sc. (Lond.). Central Chemical Laboratory, Dornoch, near Annan, Scotland. (R.A.M.C.)
- 1917 Smith, Ernest Woodhouse, D.Sc. (Vict.), 38. Malvern Road, Acocks Green; and Gas Dept., Birmingham. [c. 1919-.]
- 1911 Smith, Frank, B.Sc. (Adelaide), c/o J. C. Hutton Propty. Ltd., Zillmere. viâ Brisbane, Queensland, Australia.
- 1888 Smith. Major-General Sir Frederick, C.B., K.C.M.G., F.R.C.V.S., Royal Army Veterinary Corps, War Office, London, S.W. 1.
- 1919 Smith, Frederick, Montrose, 1, Greenham Road, Muswell Hill, London, N. 10; and Non-Metallic Test House, Aeronautical Inspection Directorate, Clement's Inn, Strand, London, W.C. 2.
- 1908 Smith, Harry, Newyn, Fleetwood Road, Southport.
- 1890 \*Smith, Henry Heron, 43, Dunvegan Road, Eltham, London, S.E. 9.
- 1911 Smith, Professor Henry Llewellyn, B.Sc. (Manc.), 25A, Borneo Street, Putney, London, S.W. 15.
- 1882 Smith, Henry Russell, 1, Aubert Park, Highbury Park, London, N. 5.

- 1908 \*Smith, Liouel Leigh, M.A. (Cantab.), Cordite Factory, Aruvankadu, Nilgiri Hills, India.
- 1913 Smith, Perey Lancelot James, M.A. (Oxon.), Loretto School, Musselburgh.
- 1913 Smith, Sydney, B.Sc. (Lond.), Ph.D. (Kiel), 2, Sunbeam Cottages, Dartford Heath, Kent.
- 1914 Smith, Thomas Alfred, B.Sc. (Lond.), 4, Birch Avenue, Talbot Road, Old Trafford, Manchester. (Lieut., R.A.F.)
- 1877 \*Smith. Watson, 34, Upper Park Road, Haverstock Hill, London, N.W. 3. [e. 1883-87, 88-92.]
- 1887 Smith, Sir William Robert, M.D. (Aberd., D.Sc. (Edin.), D.P.H. (Cantab.), Barrister-at-Law, 37, Russell Square, London, W.C. 1. (Colonel, R.A.M.C.) [c. 1888-91.]
- 1887 Smithells. Professor Arthur, C.M.G., B.Sc. (Lond. and Vict.), F.R.S., The University, Leeds. [c. 1890-93, 96-99, 1905-08; v.-p. 1915-17.] (Lieut.-Colonel, General Staff.)
- 1887 \*Snape, Henry Lloyd, D.Sc. (Lond.), Ph.D. (Göttingen), Fernlea, Mill Lane, Torquay, Devon. [c. 1900-03.]
- 1918 Snelgrove, Frederick Walter, B.Sc. Lond.), 40, Park Road, Dartford, Kent.
- 1892 Soane, Charles Emile, 31, Mattison Road, Hornsey, London, N. 4.
- 1899 \*Sodeau, William Horace, D.Sc. (Lond.), Whitehead Torpedo Works, Weymouth.
- 1914 Sorley, James, c'o Messrs, Tatlock & Thomson, 156, Bath Street Glasgow.
- 1898 \*Southerden, Frank, B.Sc. Lond.), Royal Albert Memorial College, Exeter.
- 1917 Spackman, Charles, Rosehaugh, Clitheroe, Lancashire.
- 1909 \*Spence, David, Ph.D. (Jena), c/o The Norwalk Tyre and Rubber Co., Norwalk, Connecticut, U.S.A.
- 1917 Spencer, Edmondson, A.R.S.M.
- 1916 Spencer, James Frederick, D.Sc. (Liv., Ph.D. (Breslau, 25, Bishop's Road, Highgate, London, N. 6.
- 1908 Spielmann, Percy Edwin, Ph.D. (Bâle), A.R.C.S., B.Sc. Lond.), c o The Registrar, The Institute of Chemistry, 30, Russell Square, London, W.C. 1.
- 1887 \*Spiller, Arnold, 20. Holly Avenue, Newcastle-on-Tyne.
- 1878 Spiller, John, 2, St. Mary's Road, Canonbury, London, N. 1. c. 1880-83.
- 1878 \*Spiller, William, 2, Lindfield Gardens, Humpstead, London, N.W. 3.

  [c. 1893-96.]
- 1890 Spilsbury, James, The Nook, Wake Green Road, Moseley, Birmingham.
- 1917 Sprent, William Colin, Dr. Ing., Dipl. Ing. (Dresden,, Auldmuir, Argyle Road, Saltcoats, Scotland.
- 1916 Sproxton, Foster, B.Sc. (Lond.), The Gables, Manningtree, Essex.
- 1917 \*Stanhill, David Bernard, B.Sc. Lond. 10. Halliwell Lane. Cheetham Hill, Manchester.

- 1911 Stanley, Professor George Hardy, A.R.S.M., South African School of Mines and Technology, P.O. Box 1176, Johannesburg.
- 1913 Stanley, Harry, B.Sc. (Lond.), Merchant Venturers' Technical College, Bristol. (Captain, Gloucestershire Regt.: mentioned in despatches.)
- 1900 Stansbie, John Henry, B.Sc. (Lond.), The Rowans, 145, Gravelly Hill, near Birmingham; and The Municipal Technical School, Birmingham.
- 1900 Stansell, Lionel William, 7, Albion Place, Maidstone.
- 1878 Stead, John Edward, D.Met. (Sheffield), Hon. D.Sc. (Manc.), F.R.S., 11, Queen's Terrace, Middlesbrough. [c. 1906-09.]
- 1907 Steedman, George, Longford Chemical Works. Kilwinning, Ayrshire.
- 1918 Steele, Professor Bertram Dillon, D.Sc. (Melbourne), F.R.S., University of Queensland, Department of Chemistry, Brisbane.
- 1889 Stenhouse, Thomas, 166, Drake Street, Rochdale.
- 1909 Stenhouse, Thomas. jun., B.Sc., A.R.C.S. (Lond.), A.R.S.M.. The Admiralty Chemist's Department, H.M. Dockyard, Portsmouth.
- 1918 Stephens, Frank Robert, 120, Pratt Street, London, N.W. 1.
- 1908 \*Stephenson, Herbert Frederick, A.R.C.S. (Lond.), 8, Mitcham Park.
  Mitcham, Surrey.
- 1895 \*Stern, Arthur Landauer, D.Sc. (Lond.), 148, High Street, Burton-on-Trent.
- 1878 \*Steuart, Daniel Rankin, Osborne Cottage, Broxburn, West Lothian.
- 1918 Steven, Alec Bowring, B.Sc. (Lond.), 36, Ormonde Park, Muirend, near Glasgow; and Royal Technical College, Glasgow.
- 1914 Stevens, Harold Blythen, Oxford Works, Tower Bridge Road, London, S.E. 1.
- 1902 Stevens, Henry Potter, M.A. (Oxon.), Ph.D. Heid). 15, Borough High Street, London, S.E. 1.
- 1913 Stevens, Montague White, A.R.C.S. (Lond.), H.M. Patent Office, 25, Southampton Buildings, London. W.C. 2. (Lieut., R.A O.C.)
- 1911 Stevenson, Harold, 6, Cranbourne Road, Heaton Moor, Stockport.
- 1888 Stewart, Samuel, co Messrs. Michael Nairn & Co., Ltd., Kirkcaldy, Fife.
- 1912 Stickland, Oliver Ward, B.Sc. (Lond.), c/o The New Explosives Co. Ltd., Stowmarket.
- 1911 Stock. Cyril Joseph Heath. B.Sc. (Dun.). County Analyst's Office, Darlington, co. Durham.
- 1893 Stocks, Herbert Birtwhistle, 33, Prenton Park Road, near Birkenhead, Cheshire.
- 1878 Stoker, George Naylor, Fairfield, Lessar Avenue, Clapham Common, London, S.W. 4.
- 1887 Stokes, Alfred Walter, 60, Parkhill Road, Haverstock Hill, London N.W. 3; and Town Hall, Paddington Green, London, W. 2.

#### FELLOWS.

- 1918 \*Stokes, George Alfred, 60. Parkhill Road, Hampstead, London, N.W. 3.
- 1917 Storey, William Armstrong, B.Sc. (Lond.), Home Cottage, Wick, near Bristol.
- 1919 Storr, Bertram Vincent, M.Sc. (Vict.), 26, The Square, Hford, Essex.
- 1918 Stroud, Sidney Hartnett, The University, Sydney, N.S.W. Australia.
- 1888 \*Stuart, Charles Maddock, M.A. (Cantab.), St. Dunstan's College, Catford, London, S.E.
- 1911 Stubbs, George, O.B.E., Lingdale, Etchingham Park Road, Finchley, London, N. 3. [c. 1916-1919; v.-p. 1919-.]
- 1911 Stubbs, John Robert, M.Sc. (Vict. and Liv.), The County Laboratory, 36, Dansie Street, Liverpool. (Captain, R.A.O.C.)
- 1894 \*Sudborough, Professor John Joseph, D.Sc. (Lond.), Ph.D. (Heid.), The Indian Institute of Science, Bangalore, India.
- 1902 \*Sugden, John Henry, M.Sc. (Vict.), Cardiff and County Laboratory, 9, The Parade, Cardiff.
- 1915 Suggett, Arthur Frederick, 143, George Street, Bedford.
- 1889 Sulman, Henry Livingstone, 44, London Wall, London, E.C. 2.
- 1911 Summerson, Samuel, B.Sc. (Lond.), A.K.C., St. Bernard's, Lancing, Sussex. (Captain, R.A.M.C.)
- 1887 \*Sutherland, David Alexander, Victoria Mansions, 26, Victoria Street, London, S.W. 1. [c. 1904-07.]
- 1917 Sutherland, Miss Maggie Millen Jeffs, D Sc. (Glas.), The Royal Technical College, Glasgow; and St. Margaret's, Lenzie.
- 1905 Sutherst, Walter Frederick, Ph.D. (Geneva), c/o W. Sutherst, Esq., West Cliff, Chester Road, Northwich.
- 1889 Sutton, Francis Napier, 21, Lydford Road, Cricklewood, London, N.W. 2. [c. 1906-09; 15-18.]
- 1898 \*Sutton, William Lincolne, Hillcroft, Eaton, Norwich. [c. 1915-18.]
- 1901 \*Swan, James Robertson, 58, Renfield Street, Glasgow.

## T

- 1918 Tait, John William, M.A., B.Sc. (Edin.), c'o Miss Wyllic, 2, Kilmeny Terrace, South Beach, Ardrossan, Ayrshire.
- 1908 Tankard, Arnold Rowsby, City Analyst, 40, Lowgate, Hull; and 67, Salmon Grove, Cottingham Road, Hull.
- 1888 Tate, George, Ph.D. (Würzburg), Windsor Buildings, George Street. Liverpool.
- 1877 \*Tatlock, Robert Rattray, Kilarden, 153, Church Lane. Handsworth Wood, Birmingham. [c. 1877-80, 89-92, 1907-10.]
- 1907 Tattersall, George, B.Sc. (Lond.), M.Sc. (Manc.), The University of Western Australia, Perth, W. Australia.
- 1909 \*Tattersfield, Frederick, B.Sc. (Lond.), The Laboratory, Rothamsted Experimental Station, Harpenden, Herts. (Friends' Ambulance Unit.)

- 1918 Taylor, Edgar Reuben, A.R.S.M., County Metallurgical Institute, Wednesbury.
- 1917 Taylor, George, 17, Great Tower Street, London, E.C. 3.
- 1918 Taylor, James McLean, Tynevale, Groes Road, Cressington, Liverpool.
- 1888 Taylor, Leo, Public Analyst's Laboratory, Moorgate Hall, Finsbury
  Pavement, London, E.C. 2; and Horndon, Hempstead Road,
  Upper Walthamstow, Essex. [c. 1902-05.]
- 1918 Taylor, Norman, B.Sc. (Manc., Messrs, Nobel's Explosives Co., Ltd., Ardeer, Stevenston. (Lieut., R.A.F.)
- 1878 \*Taylor, Robert Llewellyn, 37, Mayfield Road, Whalley Range, Manchester.
- 1904 Taylor, William Henry, B.Sc. (Lond.), Cornwood, Fawkham, Kent.
- 1888 Teed, Frank Litherland, D.Sc. (Lond.), 9, Mincing Lane, London, E.C. 3. [c. 1890-93.]
- 1906 Tempany, Harold Augustine, D.Sc. (Lond.), Department of Agriculture, Réduit, Mauritius.
- 1908 Templeton, Samuel, A.R.C.S.I., School of Scientific Method and Chemistry, The Gables, Botanic Avenue, Belfast.
- 1891 Terry, Hubert Lanphier, Chemical Laboratory, 23, Hopwood Avenue, Market Place, Manchester.
- 1901 Thomas, Albert Edward, B.Sc. (Lond.), Stanley House, Tavistock Road, Croydon, London, S.W.
- 1917 Thomas, John. B.A. (Cantab.), D.Sc. (Wales), Solway Dyes. Ltd., Murrell Hill Works, Carlisle. (2nd Lieut., Royal Scots Fusiliers.)
- 1897 Thomason, William, clo Messrs. Doulton & Co., Lambeth Pottery. London, S.E. 1.
- 1909 Thompson, Frank Ernest, A.R.C.S. (Lond.), The Laboratory, Walsall.
- 1916 \*Thompson, Miss Gartha, B.Sc. (Lond.), 15, Mall Road, Hammersmith, London, W. 6.
- 1908 \*Thompson, George Rudd, 69, Dock Street, Newport, Mon.
- 1911 Thompson, James, Ph.D. (Heid.), 17, Laverton Road, St. Anne's-on-Sea. Lancs. (Captain, R.E.)
- 1918 \*Thompson, John Thomas, M.Sc. (Leeds), Knostrop Sewage Works, Leeds.
- 1919 Thompson, Stanley, The Portland. St. John's Road, Buxton, Derbyshire.
- 1888 'Thomson, Andrew, M.A., D.Sc. (Edin.), 17, Riselaw Road, Edinburgh.
- 1888 Thomson, James Miln, M.B.E., Royal Gunpowder Factory, Waltham Abbey, Essex.
- 1878 Thomson, Professor John Millar, Hon. LL.D. (Glas.), F.R.S., 55 Bedford Gardens, Kensington, London, W. 8. [c. 1882-85, 88-89, 91-94, 98-1900; e. 1887-92; v.-p. 1894-97, 1903-06, 10-13; r. 1894-1900; s. 1894-95; P. 1900-03; C. 1900-12.]
- 1887 Thomson, Robert Tatlock, 156, Bath Street, Glasgow.
- 1877 Thomson, William, Royal Institution Laboratory, 79a, Princess Street, Manchester. [c. 1887-90, 93-96.]

- 1917 Thomson, William Thomas, O.B.E., Heatherbank, St. Peter's Road, Parkstone, Dorset.
- 1895 \*Thorne, Edward Ernest Howard, Bridgetown, Barbados, West Indies.
- 1884 \*Thorne, Leonard Temple, Ph.D. (Würzburg), Southampton Wharf, Battersea, London, S.W.
- 1900 \*Thorp, Walter, B.Sc. (Lond. and Leeds), Sorrentoville, Dalkey, co. Dublin; 1-2, Poolbeg Street, Dublin; and 57, George Street, Limerick.
- 1888 Thorpe, James Cole, M.A. (Oxon.), The School, Reading and National Liberal Club, Whitehall Place, London, S.W. 1.
- 1913 Thorpe, Professor Jocelyn Field, C.B.E., D.Sc. (Manc.), Ph.D. (Heid.), F.R.S., The Imperial College of Science and Technology, South Kensington, London, S.W. 7. [c. 1917-18; e. 1919-.]
- 1917 Threlfall, Sir Richard, K.B.E., M.A. (Cantab.), F.R.S., Oakhurst, Church Road, Edgbaston, Birmingham.
- 1887 Thresh. John Clough, D.Sc. (Lond.), M.D., B.Ch. (Vict.), D.P.H. (Cantab.), 91, Queen Victoria Street, London, E.C. 4.
- 1919 \*Thudichum, George Dupré, 2 Edinburgh Mansions, Howick Place, London, S,W. 1.
- 1919 Thurston, Frank Stanley, B.Sc. (Lond.), The Government Laboratory, Clement's Inn Passage, Strand, London, W.C. 2. (2nd Lieut. General List.)
- 1903 \*Tickle, Thomas, B.Sc. Lond.), Public Analyst's Laboratory, Exeter.
  [c. 1916-19.]
- 1878 \*Tilden, Sir William Augustus, D.Sc. (Lond.), Hon, LL.D. (Birm.), Hon, Sc.D. (Dub.), Hon, D.Sc. (Viet.), F.R.S., The Oaks, Murray Road, Northwood, Middlesex. c. 1881-84, 85-90; e. 1883-87; P. 1891-94; v.-p. 1894-97, 99-1902, 11-14; C. 1891-1901, 02-06, 10-13.
- 1912 Tilley, Vernon James, "Cleveland," Pollard's Hill East, Norbury, London, S.W. 16.
- 1917 Tinkler, Charles Kenneth, B.Sc. (Wales and Lond.), D.Sc. (Birm.), King's College for Women (Household and Social Science Department), Campden Hill Road, London, W. 8.
- 1913 Titherley, Arthur Walsh, D.Sc. (Vict.), Ph.D. (Heid.), D.Sc. (Liv.), The Tower, Llangollen, N. Wales,
- 1893 Tocher, James Fowler, D.Sc. (Aberdeen), Crown Mansions, 41½. Union Street, Aberdeen; and 8, Forest Road, Aberdeen.
- 1883 \*Toms, Frederick Woodland, Official Analyst, Island of Jersey.
- 1910 Totton, Joseph Harold, B.A., B.Sc. (R.U.I.), 16, Donegall Square South, Belfast.
- 1917 Travers, Morris William, D.Sc. (Lond.), F.R.S., Beacon Hall, Priory Gardens, Highgate, London, N. 6.
- 1918 Trickett, Harold, 16, Midholm, Addison Way, Finchley, London, N.W. 4.
- 1887 \*Trigger, Oliver, M.B.E., 14, Weech Road, West Hampstead, London. N.W. 6. [c. 1907-10, 12-15.]
- 1898 Trotman, Samuel Russell, M.A. (Cantab.), 1 Regent Street, Nottingham. (Brevet-Major, O.T.C.; mentioned for services rendered.)

#### FELLOWS.

- 1918 \*Trotter, John, M.A. D.Sc. (Edin.), co Mactaggart, 12. Meadow Place, Edinburgh.
- 1915 Truelove, Rupert Harry. B.Sc., A.R.C.S. (Lond.). 3, The Avenue, Harold Wood, Essex.
- 1887 \*Tucker, Alexander Edwin, 55. Station Street, Birmingham.
- 1918 Tucker, Stanley Horwood, M.Sc., A.R.C.S. (Lond.), Lincoln College. Oxford,
- 1918 Tullo, James Wilson, B.Sc. 'Edin.), St. Brendan's, Coolock, co. Dublin.
- 1918 Turnbull, Andrew. Ph.D. (Heid.), 18, Hackins Hev, Liverpool.
- 1901 Turnbull, Robert Hutchinson, 163. Hope Street, Glasgow.
- 1905 Turner, Professor Alfred John. B.Sc. (Lond.), The Victoria Technical Institute, Byculla, Bombay.
- 1887 \*Turner. Professor Thomas, M.Sc. (Birm.), A.R.S.M., The University, Edmund Street. Birmingham; and 75, Middleton Hall Road, King's Norton.
- 1908 Twiss, Douglas Frank, D.Sc. (Birm.), B.Sc. (Lond.), Glendevon, Royal Road, Sutton Coldfield.
- 1897 Twynam, Thomas, Wyngard House, Coatham Road, Redcar, Yorks.
- 1907 Tyler, Reginald. co Messrs. Thomas Firth & Sons, Norfolk Works, Sheffield.
- 1887 \*Typke, Paul George William, Lawn House, New Malden, Surrey.

## U

- 1918 Underhill, Thomas John, "Stanley." 53, Lanercost Road, Tulse Hill Park. Brixton, S.W. 2.
- 1892 Urich, Adolph, Ph.D. (Heid.), Port of Spain, Trinidad, West Indies.

## V

- 1889 \*Van Geyzel, Lieut.-Col. John Lawrence, M.B. (Aberd.), I.M.S., 23, Madeley Road, Ealing, London, W. 5.
- 1918 Vanstone, Ernest, M.Sc. (Wales), D.Sc. (Birm.), 188, High Street, C.-on-M., Manchester.
- 1891 Vasey, Samuel Archibald, 423, Strand, London, W.C. 2; and Beechcroft, Burnt Ash Lane, Bromley, Kent.
- 1917 Verteuil, Joseph de. 116. Frederick Street, Port of Spain, Trinidad, B.W.I.
- 1880 Vinson, William Ellis, c/o The Gloucester Gas Light Co., Gloucester.
- 1916 Vlies, Leonard Ellerton, Brantwood, Wilbraham Road, Alexandra Park, Manchester. [c. 1917-.]
- 1880 Voelcker, Edward William, A.R.S.M., 1, Tudor Street, New Bridge Street, London, E.C. 4. [c. 1891-94, 96-99, 1904-07, 10-13: v.-p. 1913-16; C. 1916-18, 1919-; t. 1918-.]

#### FELLOWS.

Voelcker, John Augustus, Ph.D. (Giessen), B.A., B.Sc. (Lond., Hon. M.A. (Cantab.), 20, Upper Phillimore Gardens, Kensington, London, W. 4; Royal Agricultural Society of England, 16, Bedford Square, London, W.C. 1; and 1, Tudor Street, New Bridge Street, London, E.C. 4. [c. 1893-96, 1901-04, 07-10; v.-p. 1896-99; C. 1904-06.]

## W

- 1904 'Wade, Frank, A.R.C.S., Lond.), 26, St. Ronan's Avenue, Southsea, Hants; and The Chemical Laboratory, H.M. Dockyard, Portsmouth. (Lieut., R.E.).
- 1903 Wagstaffe, Ernest Arthur, Ph.D. (Munich), M.Sc. (Vict.), The Laboratory, 22, Blackfriars Street, Manchester.
- 1917 Walker, Andrew Jamieson, B.A. (R.U.L.), Ph.D. (Heid.), 5. Carlton Bank, Harpenden, Herts.
- 1888 \*Walker, Archibald, M.A. (Oxon.), Newark Castle, Ayr.
- 1916 Walker, Frederick George Cannon, Health Department, Municipal Council, Shanghai, China. (Brevet-Major, R.E.; M.C.)
- 1916 \*Walker, Professor James, D.Sc. (Edin.), Ph.D. (Leipzig), F.R.S., 5, Wester Coates Road, Edinburgh.
- 1901 Walker, John Allsop, M.A. (Oxon.), Flawford, Stapenhill, Burton-on-Trent.
- 1906 Wall, Henry Lucas, 25, Morton Terrace, Gainsborough, Lines.
- 1888 Waller, Bryan Charles, M.D. (Edin.), L.R.C.P. (Edin.), F.R.C.S. (Edin.), Masongill House, Ingleton, Yorks.
- 1906 \*Wallis, Thomas Edward, B.Sc. (Lond.), 5, Hillsboro' Avenue, Exeter.
- 1911 Walpole, George Stanley, D.Sc. (Melbourne), 121, Victoria Street, Westminster, London, S.W. 1. (Captain, R.A.F.)
- 1878 Ward, George, Buckingham Terrace, Headingley, Leeds.
- 1898 Warden, John Blair, 5, Eton Gardens, Glasgow.
- 1911 Warner, Charles Horne, B.Sc. (Lond.), M.B., B.S., M.R.C.S. (Eng.), L.R.C.P. (Lond.), D.I.C., The Middlesex Hospital, London, W. 1. (Captain, R.A.M.C.)
- 1901 \*Warren, Bertram William John, Lamorna, Sutton Road, Southend-on-Sea.
- 1913 \*Warrick, Robert Walter, Woodville, Welling, Kent.
- 1894 \*Waterfall, Charles James, 4, Queen Square, Bristol.
- 1918 Watmough, Benjamin, Hatfield Villa, Hatfield Street, Wakefield, Yorks.
- 1894 Watson, Eric Edmund, 89, Brook Green, Hammersmith, London, W. 6.
- 1901 Watson, Frederick William, B.Sc. (Land), Conscillated Goldfields of South Africa, Ltd., Laboratory, P.O. Box 108, Germiston, Johannesburg, South Africa.
- 1917 Watson, James, D.Sc. (Dun.), Shrop-hire Mines, Ltd., Hanwood, Salop.

I.C.

- 1887 \*Watson, John, Magadi Soda Co., Ltd., c/o Messrs, Andrew Yule & Co., Calcutta, India.
- 1916 Watson, John Adam, A.C.G.L. c/o W. L. Watson, Esq., 39. Hillfield Road, W. Hampstead, London, N.W. 6.
- 1878 \*Watt, Alexander, 29, Grange Mount, Claughton, Birkenhead.
- 1908 Watt, Francis Langsten, A.R.C.S. (Lond., 5, Hamilton Street, Sydney, N.S.W., Australia.
- 1909 Watt, Henry Edgar, D.Sc. (Dun.), 2, Abinger Gardens, Edinburgh.
- 1890 Watts, Sir Francis, K.C.M.G., D.Sc. (Birm.). Imperial Commissioner of Agriculture for the West Indies, Barbados, W.I.
- 1916 Watts, Hugh Edmund, Ph.D. (Zürich), B.Sc. (Lond.), Gordon House, Hutton, Essex.
- 1873 \*Watts, John, M.A. (Oxon.), D.Sc. (Lond.), Chemical Laboratory, The Museum, Oxford.
- 1858 \*Way. Edward John. 135-136, Cullinan Buildings, Simmonds Street, Johanne-burg, Transvaal. South Africa; and c'o Messrs. Farrar Bros., 4, London Wall Buildings, London, E.C. 2.
- 1912 Weall, Horace Graham, Government Laboratories, Bloemfontein, South Africa.
- 1888 Webster, Charles Stuart Stanford, 6, The Quadrant. Redland, Bristol.
- 1904 Webster, John. Laboratory of Pathological Chemistry, St. Mary's Hospital, London, W. 2.
- 1891 Weeks, Henry Bridges, The Retreat, Infield Park, Barrow-in-Furness.
- 1910 Weir, James Morrison, M.A., B.Sc. (St. Andrews). St. Andrew's Cottage, Ardrossan, Ayrshire.
- 1918 Weir, John, M.A. B.Sc. (St. Andrews), Ph.D. (Wiirzburg), Ardeer Factory, Stevenston, Ayrshire.
- 1914 \*Wells, Gordon, B.Sc., A.R.C.S. (Lond.), A.R.S.M., Whitcote, Spencer Park, St. Albans.
- 1888 Werner, Professor Emil Alphonse, 1, Fairfield Park. Highfield Road, Rathgar, co. Dublin. [c. 1909-10.]
- 1887 \*Wertheimer, Professor Julius, D.Sc. (Bristol), B.Sc., B.A. (Lond.), Merchant Venturers' Technical College, Bristol.
- 1900 West, Charles Alfred, B.Sc., A.R.C.S. (Lond.), 9, Tideswell Road, Putney, London, S.W. 15; and Royal College of Science, London, S.W. 7.
- 1850 Westmoreland, James William, A.R.S.M., 12, Arthington Terrace, Hunslet, Leeds.
- 1918 Weston, Frank Edwin, B.Sc. (Lond.), 29, Sibella Road, Clapham, London, S.W. 4.
- 1911 Whalley, Lawrence John de, B.Sc. (Lond.). 18. Brandram Road, Lee, London, S.E. 13.
- 1899 Wharton, Frederick Malcolm, M.B.E., The New Explosives Co., Ltd., Stowmarket, Suffolk.
- 1916 Wheatley, Robert, B.Sc. (Leeds), Balinard, Davidson's Mains, Midlothian. (Corporal, R.E.)

- 1918 Wheeler, Edward Gaerge Gidleigh, B.Sc. (Lond.), 59, Cranwich Road, Stamford Hill, London, N. 16.
- 1878 \*Whewell, George, Town Hall Chambers, 11, Exchange Street, Blackburn.
- 1878 \*Whiffen, William George, Lombard Road, Battersea, London, S.W. 11.
- 1901 \*White, Arthur Lee, A.R.C.S., B.Sc. (Lond.).
- 1892 White, Edmund, B.Sc. (L. ad.), c., Messes, Hopkin & Williams, Ltd., 16, Cross Street, Hatton Garden, London, E.C. 1; and 8, Egliston Road, Putney, London, S.W. 15. [c. 1917-.]
- 1918 White, Ferral's David, on Technical Research Department, Messrs. Levinstein, Ltd., Blackley, Manchester. (Captain, R.E.)
- 1891 White, Jean, County Analyst, County Offices, St. Mary's Gate, Derby, c. 1910-13.]
- 1919 White John Christison, A.K.C., 49, 8t. James' Read, Upper Tooting, London, S.W. 17. (Major, General List; M.C.)
- 1896 White, John Harry, A.R.S.M., Los Andes, Chile, S. America.
- 1918 Whiteley, Miss Martha Annie, O.B.E., D.Sc. (Lond.), 111. Castlenau, Barnes, London, S.W. 13.
- 1887 \*Whiteley, Ricard Ll yd, Municipal Science and Technical School, West Bromwich.
- 1899 \*Whitton, James Ted, Messrs, Nobel's Explosives Works, Ardeer, Stevenston, Ayrshire.
- 1918 \*Widdows, Miss Sibyl Taite, B.Sc. (Lond.), Holsworthy, Nether Street, Church End, Finchley, London, N. 3.
- 1918 Wilbraham, Evelyn Caryl Bootle, O.B.E., Ph.D. (Leipzig), 28, Ovington Square, London, S.W. 3.
- 1902 Wild, Roland Cecil, The Grange, New Eltham, London, S.E. 9.
- 1911 Wilkie, John Matthew, B.Sc. (Lond.), 5, Balmoral Avenue, West Bridgford, Notts.
- 1919 Wilkinson, John Alfred Frome, B.Sc. (Lond.), Directorate of Chemical Inspection, Wellesley House, Red Lion Lane, Woolwich, London, S.E. 18.
- 1913 Wilkinson, William Percy. Department of Trade and Customs, Melbourne.

  Australia.
- 1901 William Henry, C.B., C.M.G., M.D., B.Sc. (Lond.), D.P.H. (Conjoint Board), M.R.C.P., L.S.A. (Lond.), D.P.H. (Eng.), St. Mary's Hospital, Paddington, London, W. 2. [e. 1909-14; c. 1914-17.] (Colonel, R.A.M.C.)
- 1917 Williams, Edward, Japanese Explosives Co., Hiratsuka, Sagami, Japan: and Bedw Cottage, Holywell, N. Wales.
- 1919 Williams, Herbert James. 5. Richmond Road. Uplands, Swansea.
- 1887 Williams, Rowland, 79, Queen Square, Lancaster.
- 1893 Williams, Walter Collingwood, B.Sc. (Lond.), The Public Analyst's Laboratories, 36, Dansie Street, Liverpool.
- 1918 Williams. William Arthur, 19, Craiglockhart Terrace, Edinburgh.
- 1894 \*Williams, Professor William Carleton, B.Sc. (Vict.), Broomgrove, Goring-on-Thames.

- 1878 Williams, William John, Analytical and Technical Chemist. 1503, Foulkard Street, Frankford, Philadelphia, U.S.A.; and c/o Miss M. A. Williams, Frondêg, Abergele, North Wales.
- 1893 Williamson, Sidney, Ph.D. (Munich), 32, Charles Street, Berkhamsted: and The Cooper Technical Bureau, 11, Broad Street, Bloomsbury, London, W.C. 2.
- 1917 \*Wilsmore, Professor Norman Thomas Mortimer, D.Sc. (Melbourne), The University, Perth, W. Australia.
- 1919 Wilson. Arthur. 42b. Wickham Road, St. Johns. London. S.E. 4. (Major, Leinster Regt., M.C.)
- 1884 Wilson, Charles Joseph, 14, Suffolk Street, Pall Mall, London, S.W. 1.
- 1909 Wilson, Ernest John, M.A. (Cantab.), Osborne House, Wisbech. (R.A.M.C.)
- 1916 Wilson, Forsyth James, D.Sc. (Edin.), Ph.D. (Leipzig), Chemistry Department, Royal Technical College, Glasgow. (Captain, R.E.)
- 1892 \*Wilson, Harry, 32, Westwood Road, Southampton.
- 1909 Wilson, John. M.Sc. (Vict.). Chemical Department. Battersea Polytechnic, London, S.W.
- 1918 Wilson, Leonard Philip, F.C.G.I., Rosemont, Holyhead Road, Coventry.
- 1917 Wilson, Lothian, B.Sc. (Lond.), 16, St. Margaret's Road, Plumstead, London, S.E. 18. (Major, R.A.S.C.)
- 1918 Wilson. Thomas Alexander, 91, New Road, Ayr: and c/o Messrs.
  Alexander Cross & Sons, Ltd.. Research Laboratory, 23, Hope Street, Glasgow.
- 1904 \*Winch, Howard James, Shivrajpur P.O., ria Champaner Road Station, C. S. L. Rv., Panch Mahals, India.
- 1893 \*Winder, Goodlatte Richardson, Ph.D. (Zürich), 1. Beech Road. Cheadle Hulme, Manchester.
- 1914 Winfield, Jacob, B.Sc. (Lond.), 190. Hammersmith Road, London, W. 6.
- 1887 Wingham, Arthur, 3, Taswell Road, Southsea.
- 1892 Wirtz, Quirin, M.A., Ph.D. (Bonn), 32. Great Ormond Street, London, W.C. 1.
- 1914 Wood, Denys Richard. Chemical and Bacteriological Laboratories.
  Sunderland and S. Shields Water Co., 29. St. John Street,
  Sunderland.
- 1879 Wood, George William, A.K.C., Rossholme, Leigham Avenue, Streatham, London, S.W. 16,
- 1916 Wood, James, M.A., B.Sc. (Aberd.), c o Research Department, Co-operative Wholesale Society, 109, Corporation Street, Manchester.
- 1915 Wood, Joseph Turney, 62, Park Road, Nottingham.
- 1919 Wood, Professor Thomas Barlow, M.A. (Cantab., F.R.S., Gonville and Caius College, Cambridge.
- 1917 \*Wood, William Francis John, C.B.E., B.Sc. (Lond.), Ardsley House, near Barnsley, Yorks.
- 1900 Woodhead, Samuel Allinson, M.Sc. (Dun.), The Agricultural College, Uckfield, Sussex.

#### FELLOWS.

- 1887 \*Woodward, James, B.A., B.Se. (Lond.), Drummond House, 31, Coventry Road, Ilford, Essex; and Government Laboratory, Clement's Inn Passage, London, W.C. 2. [c. 1913-16.]
- 1893 Woosnam, Richard William, Rye Corner, Welholme Road, Grimsby.
- 1888 \*Worrall, Jason Hall, Howsley, Chapeltown, near Sheffield.
- 1917 \*Worthington, Arthur, Lynwood, Great Lever, Bolton.
- 1910 Wright, Charles Hardd, B.A. Cantelle, Department of Agriculture, Suva, Fiji; and 3, Virginia Terrace, Leeds,
- 1900 Wright, Leonard Victor, M.A. (Cantab.), 52, Colar R. ad, Northampton.
- 1897 Wright, Sidney Bristow, co The Dilaro Smeltin, and Refining Co., Ltd., Deloro, Ontario, Canada.
- 1917 Wright, Walter Joseph, The Mall, Faversham, Kent.
- 1887 \*Wynne, Profess r William Palmer, D.Sc., A.R.C.S. (Lond.), F.R.S.,
  The University, Sheffield; and 17, Taptonville Road, Sheffield.
  [e. 1900-04; c. 1905-08.]

## Y

- 1909 Yates, Joseph, M.Sc. (Manc.), B.Sc. (Lond.), Technical College, Derby.
- 1918 Yeoman, Ernest Wickham, B.Sc., A.R.C.S., A.R.S.M. (Lond.), 1, Regent Square, London, W.C. 1.
- 1902 Young, Francis Samuel, M.A. (Oxon.), The Coll . . Bishop's Stortford, Herts.
- 1909 Young, George, Ph.D. Erkingen, 46, Church & resent, Church End. Finchley, London, N. 3.
- 1899 Young, Henry Stow, Kuching, Sarawak.
- 1915 Young, Horace John, Overdene, Ashfield Grove, Whisley Bay.
- 1914 Young, John, Chief Chemist, The Firest ne Tie and Rubber Co., Akron, Ohio, U.S.A.
- 1918 Young, John Henry, M.Sc. (Vict.), 58, Queensberrugh Gardens, Hyndland, Glasgow.
- 1888 'Young, Profess r Sydney, D.Sc. (London, B.Sc. (Marc.) Hon. Sc.D. (Dub. and Bristol), F.R.S., Trinity College, Dublin. [c. 1904-07; 11-14.]
- 1878 \*Young, William Charles, Chemical Laboratories, 24. Aldgate, London, E. 1.
- 1898 'Young, William Maurice Gathorne, 43, Bridge Terrare, Doncaster. [c. 1909-12; 1918-.]

# ASSOCIATES OF THE INSTITUTE OF CHEMISTRY OF GREAT BRITAIN AND IRELAND.

## Date of Admission

- 1918 Acland. Lauchlan Henry Dyke, B.A. (Oxon.), Island View, Barton-on-Sea, New Milton, Hants. (Captain, R.E.; M.C.)
- 1917 Acland, Theodore William Gull, B.A. (Cantab.), 10. Bryanston Square, London, W. 1. (Captain, R.E.)
- 1917 Adams, Charles Ambrose, B.Sc. (Lond.). 10. Christchurch Place, Christchurch Road, London, N.W. 3.
- 1919 Adams, Thomas Henry, 7, Douglas Street, Derby.
- 1917 Adye, John William, B.Sc. (Bris.), c/o The Mond Nickel Co., Ltd., Clydach, S.O., Glamorgan.
- 1918 Albinson, John, B.Sc. (Vict.), 17, Smith Street, Bolton, Lancs, (R.E.)
- 1918 Aldred, Harold, M.Sc. (Manc.).
- 1905 Alexander, James, 2208, 15th Street, Walbrook, Baltimore, Maryland, U.S.A.
- 1918 Allan, David Lyall, B.Sc. (Liv.), Dynamite Factory. Modderfontein. Transvaal, South Africa.
- 1918 Allcott, Arnold, B.Sc. (Manc.). Fernlea. Great Harwood. Lancs. (Captain, R.E.)
- 1918 Allen, Frederick Thomas, M.Sc. (Dun.), M.A. (N.U.I.). Ramsey Grammar School, Huntingdon. (Officer Commanding Cadet Corps.)
- 1918 Allpress. Charles Frederick, B.Sc. (Birm., 6, Drayton Road, King's Heath, Birmingham. (Flight Cadet, R.A.F.)
- 1918 Amies, Edwin John, B.Sc. (Lond.), A.R.C.S., 10, Salisbury Road, Thorpe Hamlet, Norwich.
- 1915 Amoore Rouald Lewis, Mayeroft, Erpingham Road, Putney Common, London, S.W. 15. (R.A.M.C.)
- 1911 Anderson, Edward, co Mrs. Campbell, 7, Hermand Terrace, Slateford Road, Edinburgh.
- 1919 Anderson, John. M.A. (Glas.), B.Sc. (Lond.), Isla Cottage, Bent Road, Hamilton, Scotland. (Major.)
- 1917 Anderson, Lennox James, The Barking Chemicals. Ltd., Creeksmouth Road, Barking.
- 1918 Andrews, John, B.Sc. (Lond.). 4, Casimir Road. Harold's Cross. Dublin.
- 1918 Andrews, Lionel Conrad, B.Sc. (Lond.). Heatherset, Cavendish Road, Sutton, Surrey.
- 1902 Andrews. Samuel, B.Sc., A.R.C.S. (Lond.), H.M. Patent Office, Southampton Buildings, London, W.C. 2.

#### ASSOCIATES.

- 1919 Andrews, William Archibaid, B.Sc. (Birm.), 33, Lichfield Street, Reconstruction Staffs. (Captain, R.A.F.)
- 1918 Applebee, Harry Charles, 509, Edge Lane, Droylsten, Manchester.
- 1919 Appleby, Bert John, 3, Charleville Road, Handsworth, Birmingham.
- 1919 Arthur, John Stanley, B.Sc. (Lend.), 99, Southfield Road, Oxford (Captain, R.A.M.C.)
- 1915 Arundel, Edgar, B.Sc. (Loud.), 99, Poppleton Road, Leytonstone, London, E. 11.
- 1917 Ashmore, Stanley Arthur, B.Sc. (Lond.), 57, St. Aidan's Read, East Dulwich, London, S.E. 22.
- 1919 Ashten, Miss Darithy, B.Sc. Tech. (Menc.), 18. Randlesham Street Heaton Park, Manchester.
- 1902 Aston, Francis William, Tonnael House, Harborne, Birmingham.
- 1919 Aston, William George, 30, The Square, Ilford, Essex.
- 1917 Atkinson, Harford Montgomery, B.Sc. (Lond.), Ph.D. (Würzburg), John Milton House, 125, Bunhill Row, London, E.C. 1.
- 1918 Atkinson, Harold, B.A. (Oxon.), 29, Greenhill Crescent, Harrow.
- 1918 Atkinson, Samuel Conver, E.Sc. (Lond., 20, Garling Road, Plunsteed London, S.E. 18.
- 1918 Aubrey, Thomas Emrys, B.Sc. (Wales), Cambrian House, Llansadwar, Llanwrda, S. Wales.
- 1918 Ault, Wilfrid Beaumont, B.S., (Birm.), 383, City Road, Edgbaston, Birmingham,

## B

- 1919 Bachrach, Roland, A.R.C.S., The Chestnuts, 196, Denmark Hill, London S.E. 5, (R.E.)
- 1917 Bagnall, Howard Henry, B.Sc. (Birm.), Ellesmere, 21, Crosbie Road Harborne, Birmingham.
- 1917 Bagshaw, Walter Noël, B.Sc. (Lond.), Moorfield, Birkenshaw, need Bradford, (Lieut., York and Lancaster Regt.)
- 1919 Bailes, Heny. B.A. (Cantab.), King's College. Taunton, Devon.
- 1917 Bailey, Clement William, M.Sc. (Birm.), Evingten, Leicester. (Lances-Corporal, Leicestershire Regt.).
- 1917 Baillie, William Learmonth, 20 Dallin Road. Shooters Hill, London S.E. 18.
- 1917 Bainbridge, Ernest Graham, M.Sc. (Manc.), 5, Leicester Street. Ashtonunder-Lyne.
- 1918 Bainbridge, James Roland, M.Sc. (Manc.), Inglenook, Arklow. C., Wicklow.
- 1919 Baker, Gerrard Wollaston, 3, Hayling Park Road, South Crayler Surrey.
- 1918 Baldwin, Sam, M.Sc. (Vict.), Sandholme, St. George's Avenue. Devercourt.

#### ASSOCIATES.

- 1918 Bales, Sidney Hartley, B.Sc. (Leeds), Glenholm, 338, High Road, Lee, London, S.E. 12.
- 1919 Balls, Ernest George, B.Sc. (Lond.), Orford House, Wellington Road, Wanstead, London, E. 11. (Lieut., R.E.; M.C.)
- 1913 Barber, Charles Douglas, B.Sc. (Lond.), 20, Champion Road, Upminster, Essex.
- 1918 Barber, Charles Frederick Lee, 12, Queen's Terrace. Otley, York.
- 1918 Barker, James Stanley. 70 Senior Street, Mold Green, Huddersfield.
- 1918 Barker, Matthew Felix, B.Sc. (Lond.), A.R.C.S., D.I.C., 44, Barclay Road, Walham Green, London, S.W. 6.
- 1918 Barnes. Arthur Chapman, B.Sc. (Manc.), Government Laboratory, Nairobi, British East Africa.
- 1911 Barnett, Edward de Barry, B.Sc. (Lond.), 9, Collingham Road, South Kensington, London, S.W. 5. (Conducteur Service de Santé Militaire, Ambulance Alpine, French Army.)
- 1918 Barnett, Walter Leigh, B.Sc. (Lond.), 18, Carden Road. Peckham Rye, London, S.E. 15.
- 1918 Barr, James. B.Sc., A.R.C.S. (Lond.), Hillside, Mellor, Derbyshire.
- 1893 Barratt, William Steers, A.R.C.S.I., The College of Technology, Sackville Street, Manchester.
- 1919 Barrett, Ernest, B.Sc. (Lond.). 121, Algernon Road, Lewisham, London. S.E. 13. (Captain, R.A.F.)
- 1919 Barrett, Frank Leslie, 15, Russell Road, Whalley Range, Manchester. (Corporal, R.E.)
- 1918 Barrett. John Douglas, B.Sc. (Leeds), c/o Mrs. Craven, 43, Healdfield Road, Castleford.
- 1918 Barrs, Charles Edward, 58, South Hill Park, Hampstead, London, N.W. 3.
- 1918 Bassett, Harold Llewellyn, M.A. (Cantab.), B.Sc. (Lond.). Wincanton, Somerset. (Captain, R.E.)
- 1913 Bartlett, Dorothy Jessie (see Storey).
- 1914 Bate, Stanley Charles, B.Sc. (Lond.), 2, Vermont Road, Upper Norwood. London. S.E. 19.
- 1919 Bayley, Frank, M.Sc.Tech. (Manc.), 64. Richmond Grove. Longsight.
  Manchester.
- 1919 Bean, Philip Leslic, A.R.C.S., Glengariff, Ashburton Road, Croydon, Surrey. (H.A.C.)
- 1918 Beard, Edgar, B.Sc. (Edin.). c o Brian, 88, Winchester Road, Brislington, Bristol. (Corporal, R.E.)
- 1918 Bearder, Ernest Arthur, B.Sc. (Leeds), Stonegate, Highfield, Sale, Cheshire.
- 1918 Bearn, Joseph Gauld, M.Sc. (Manc.), 28. Audrey Road, Ilford, Essex.
- 1918 Beckinsale, Sydney, B.Sc. (Wales), 14, Bracken Avenue, Balbam, London, S.W. 12.
- 1919 Beesley, Darrell Webb. 380. Dickinson Road, Longsight, Manchester.

## Date of

#### ASSOCIATES.

- 1917 Beesley, Richard Moore, M.Se. Mane, Far Cross Bank, Kendel, West-moreland. (Captain, R.E.; M.C.)
- 1919 Bell, Herbert Dearman, Sewale Dispisal Works, Milente, Stratford on-Avon
- 1919 Bell, Wilfred Andrews, 4. St. Michael's Terane, Headingley, Leeds. (Seaman, R.N.)
- 1918 Bennett, William Gordon, M.Sc. (Lords), sprillion, 6. Marchment Road, Edinbugh. (Captain, R.F.A.)
- 1918 Benson, Miss Margaret, M.Sc. (Manc.), 13, Bates Street, Longsight, Manchester,
- 1918 Bentley, Frank Thomas, B.sc. Birm., 62, Collage Read, Moseley, Birmingham.
- 1919 Berends, Johann Friedrich, B.Sc. (Land.) 56, Full and R. al. Harnsey, London, N. 8.
- 1918 Berry, Edgar, M Sc. (Manc.), 73, Bowden Road, Garston, Liverpool.
- 1918 Bevan, Abram, B.Sc. (Wales), A.R.C.S., 11, Penywern Road, Clydach, Glam. (2nd Lieut., R.G.A.)
- 1918 Beynon, F.Lgar Mostvn, B.S., Waies), 26, Gleveram, Street, Llanelly, Carm.
- 1918 Bickerstaff, Robert, c. The Greenwich Intaid Landburn Co. Ltd. 74. Tunnel Avenue, East Greenwich, London, S.E. 3. (R.E.)
- 1917 Bickle, William Harry, B.S.; L. ada, 15, G. sacte R. ad. Plainst ad., London, S.E. 18.
- 1919 Biffen, Frank Moody, B.Sc. (Lond., 77, Albany Street, Regent's Park, London, N.W. 1.
- 1918 Billbrough, Sidney, B.S., (Londo, The Gables, Knuttingley, Yorks,
- 1918 Birchall, William, "Ingledene," Green End Lane, St. Helens, Lanes.
- 1918 Bird, John Coull, B.S., (Londy, Craven Wess, Palltok, Huddersheld,
- 1918 Birse, William Milne, M.A., B.Sc. (Abord.), 40, Gray Street, Aberdoon.
- 1917 Bishop, Rabert Odell, e.o M. sers, Fullers, Ltd., Confectioners, Hammersmith, London, W. (Lieut., M. of M.)
- 1917 Black, James Walter, B.Sc. (Lond.), 36, Cloudesdale Road, Balham, London, S.W. 17.
- 1918 Blackburn, Rud-lph Isaac, B.A. (Cantab.) B.Sc. (Lond.), S. Dunlace Road, Clapton, London, E. 5.
- 1918 Blackler, Montague Bennett, Ph.D. (Wijrzburg, S. Higham Station Avenue, South Chingford, London, E. 4.
- 1918 Blair, Ethelbert William, B.Sc. (Lond.), D.I.C., Newington, Parkstone Avenue, Parkstone, Dorset.
- 1917 Blake-Wride, Douglas Herbert, M.Sc. Londer, The Ferns, 4, Wynell Road, Forest Hill, London, S.E. 23.
- 1918 Blakey, George Alfred, 20, Saltburn Place, Bradford.
- 1919 Blakey, Walter, 569, London Road, Oakhill, Stoke-on-Trent.
- 1918 Blatchford, Alfred Samuel, M.Sc. Dun. 169. Chanterlands Avenue. Hull.

## Date of Associates.

- 1918 Boas, Isaac Herbert, B.Sc. (Adelaide), M.Sc. (Perth), Technical School, Perth, Western Australia.
- 1895 Bodey, Augustus Charles, B.Sc. (Lond.), 56, Beecroft Road, Brockley, London, S.E. 4.
- 1919 Bolton, Harold Samuel, 99, Kenilworth Avenue, Wimbledon Park, London, S.W. 19. (Lieut., R.E.)
- 1917 Boorman, Harry George Trench, 19. Court Street, Faversham, Kent. (Sub-Lieut., R.N. V.R.)
- 1917 Bostock, Bertram Ravenscroft. M.Sc.Tech. (Manc.), Winnington Mount, Northwich, Cheshire.
- 1915 Boswell, Arnold, B.A. (Cantab.), 33, St. Barnabas Road, Cambridge.
- 1915 Bosworth, Stewart MacGregor, B.Sc. (Lond.), 56, Coventry Road, Bedworth, Nuneaton. (Captain, R.A.O.C.)
- 1919 Bousfield, Edward Alexander Robert, B.Sc. (Lond.), 6, de Crespigny Park, Denmark Hill, London, S.E. 5. (R.F.A.)
- 1917 Bowack, Douglas Anderson, 1, Park View, Wellington Road, Cork, Ireland. (Rifle Brigade.)
- 1917 Bowden, Richard Charles, M.Sc. (Bris.), 2, Totteridge Road, Enfield Wash, Middlesex.
- 1918 Bowyer, Arthur Stewart, M.Sc. (Manc.), The Woodlands, Chelford, Cheshire.
- 1918 Boyd, William John, B.Sc. (Glas.), 73, Manse Street, Saltcoats, Ayrshire.
- 1918 Boyle, Robert Alexander, B.Sc. (Queensland), Inaroondan, vià Bundaberg, Queensland, Australia.
- 1918 Bracher, André. 9. Cannon Hill Lane, Merton Park, London, S.W. 19. (Captain, R.A.F.)
- 1918 Bradley, George William James, 1, Garden Suburb, Park Road, Ebbw Vale, Mon.
- 1919 Bramer, John Douglas Stacey, Enville, Cardigan Street, Newmarket. (Captain, Royal Warwickshire Regt.)
- 1916 Brannigan, Peter Joseph, D.Sc. (Q.U.B.), 137, Springfield Road, Belfast.
- 1917 Branson, Frederick Hartridge, Northview, West Park Grove, Park Lane, Roundhay, Leeds.
- 1919 Brash, William, A.R.C.S., B.Sc. (Lond.), 53, Aynhoe Road, West Kensington, London, W. 14.
- 1918 Braunholtz, Walter Theodore Karl, B.A. (Cantab.), Goslar, Adams Road, Cambridge. (R.E.)
- 1917 Bray, Geoffrey Trelawney, 3, Milton Road, Highgate, London, N. 6. (2nd Lieut., I.W.T.)
- 1917 Brazier, Sidney Albert, M.Sc. (Birm.). 2. Mansfield Villas, Yardley Wood Road, Moseley, Birmingham. (Lieut., R.N.V.R.)
- 1918 Brekke, Lorentz Oliver, B.Sc. (Leeds). 193. Coltman Street, Hull. (Lieut., E. Yorks. Regt.)
- 1918 Brennan, Arthur, B.Sc. (Dun.), Technical Institute, Newport, Mon.
- 1918 Bride, Cyril M.A. (Oxon.), B.Sc. (Lond.), 161. Marton Road, Middlesbrough,

1918

#### ASSOCIATES.

- 1918 Bridge, Fred, A.R.C.S. (Lond.), 39, Lyndhurst Road, Highams Page Chingford, London, E. 4.
- Brimley, John Edmund, B.Sc. (Lend.), 2a, The Leas, Westelliffe Sea. 1917
- 1918 Brittain, Arthur, M.Sc. (Liv.), 44, Albert Street, Eccles, Manchester.
- Brittain, Charles Edward, B.A. (Lond.), M.Sc. (Vict. and Leeds). The Grammar School, Normanton, Yorks,
- 1917 Broadhurst, Harold Marland, B.S., Tech. (Manc.), 5, Elizabeth Terrace,
- 1918 Brown, Hagh Browning, Maxwellton, Brookfield, by Johnstone.
- 1918 Brown, Ivor Vernon, B.Sc. (Wales).
- Brown, Leslie Norman, A.R.C.S., Aperdour H. us. Beaconstield Avenue. 1919 Dover. (2nd Lieut., I.W.T.)
- Brown, Resert Lidwill, A.R.C.S.L. 69, 1 a det Reul, Camperwell, L. adon, S.E. 5. Brown . Walter Lord, B.S., (Lee ls), Kinjamie, Rivitor, Road, Burntis-1919
- Browning, Henry, junr., M.Sc. (Mane.), co. The Restory, Beswick, 1918
- Brownin , Romad George, B.Sc. (Lond.), B.Iswains, New D ver Road, 1916 Canterbury. (Captain, R.E.)
- Brownie, George, B.Sc. (Edin.), Royal College of Stience, Dublin. 1918
- 1917 Browns at Thomas Kerfort, B.Sc. (Manell, B.A. (Lintably, 12, Priory Gardens, Highgate, London, N. 6.
- Bruce, J. in: Ronald, M.Sc. (Liv.), 101, Manor R ad, Lis ard, Wallasev 1918
- Bruce, Reject James, 29, Foster Rad, Dukes Avenue, Chiswick, 1918 London, W. 4. (R.E.)
- 1917 Bruckman, Richard Theodore, B.Sc. Londy, Dronley, Woodside Purk Road, North Finchley, London, N. 12. (Captain, Border Regt.)
- Brunvee, Thomas Herbert, B.Sc. (Sheff.). Penketh School, nr. Warring-1918 ton, Lanes. (Corporal, R.E.)
- 1918 Bryant, Charles Sidney, E.A. (Oxon.), B.Sc. (Lond.), Research Department, Royal Arsenal, Woolwich, London, S.E. 18.
- Bull, Frank Henry Charles, B.Sc. (Bris.), 75. North Road, St. Andrews. 1919
- Bull. Philip Cecil, A.R.C.S. (Lond.), 33, Queen's Gate, Levelon, S.W. 7. 1917 (Major, Suffolk Regt.; D.S.O.; mentioned in despatches).
- 1906 Bullock, Edmund Rayner, B.Sc. (Lond.), A.R.C.S., e. The Eastman Kodak Co., Kodak Park Works, Rochester, N.Y., U.S.A.
- Bult, Herbert John, 63, Addiscombe Road, Croydon, Surrey. 1918
- Bunbury, Hugh Mills, B.Sc. (Lond. and Bris.), 36, Seymour Road, 1917 Stapleton Road, Bristol.
- Bunce, Albyn, c/o Messrs, Cannington Shaw & Co., Ltd., Sherdley 1919 Works. St. Helens, Lancs.

#### ASSOCIATES

- 1919 Bunting, Henry Herbert, Oficina de Ensayes. The Peruvian Corporation, Ltd., Callao, Peru.
- 1917 Burbridge, Walter Norman, 32, Denmark Street, Watford, Herts.
- 1918 Burgess, William Ernest. B.Sc. (Vict. and Leeds), 30. Springdale Avenue, Huddersfield, Yorks.
- 1917 Burr, Alfred Hamilton, M.A., B.Sc. (Aberd.), 20. George Street, Aberdeen. (R.E.)
- 1918 Burrows, Edward Lister, 9, Hounslow Road, Feltham, Middlesex.
- 1917 Burton, Donald, M.Sc. (Leeds), Westbourne, St. Andrew's Avenue, Morley, near Leeds.
- 1891 Burton, Joseph.
- 1917 Burwell, Robert Parmenter, 92, Southtown Road, Great Yarmouth.
- 1919 Bury, Charles Rugeley. B.A., B.Sc. (Oxon). Ellfield, Wotton-under-Edge, Gloucestershire.
- 1918 Butler, Raymond Renard, B.Sc. (Lond.), 73, Mount Park Road, Ealing, London, W. 5.
- 1917 Butler-Jones, Frank B.A. (Cantab.), 124, Inderwick Road. Crouch End, London, N. 8.
- 1918 Butterworth, John Pilling. B.Sc. (Manc.), 47, Broad Lane, Dalton, Huddersfield.
- 1917 Byles, John Edward. B.Sc. (Manc.), The Government Laboratory, Clement's Inn Passage, Strand, London, W.C. 2.

## C

- 1918 Cabell, Harold Frank, B.Sc. (Lond.), 146. Elborough Street, Southfields, London, S.W. 18. (R.E.)
- 1918 Caird, Miss Ella, Lyndhurst, Regent's Park Road, Finchley, London, N.
- 1918 Calam, Percy, B.Sc. A.R.C.S. (Lond.), 150, Woodside Road, Lockwood, Huddersfield.
- 1917 Callister, Cyril Percy, M.Sc. (Melbourne), H.M. Factory, Gretna. (A.I.F.)
- 1918 Callow, Raphael Heber, M.Sc. (Liv.), 16, Breck Road, Anfield, Liverpool,
- 1919 Campbell, John, A.R.T.C., 56. Clifford Street, Ibrox, Glasgow.
- 1918 Cant. Thomas, M.A. (Glas.), B.Sc. (Lond.), Broompark West, Kelty Avenue, Bo'ness, Scotland.
- 1918 Cardell, Ivor Southwell, M.Sc. (Wales), 5, Whitchurch Road, Cardiff. (Lieut., R.G.A.)
- 1917 Carpenter, Charles William, M.Sc.Tech. (Manc.), 36, Gordon Street, Shaw, near Oldham.
- 1919 Carpenter. George Kingsford, B.A. (T.C.D.), 21, Grosvenor Road, Rathmines, Dublin.
- 1919 Carpenter, Leonard. B.Sc. (Lond.). 143, Palmerston Road. Bowes Park, London, N. 22.

## Date of ASSOCIATES.

- 1917 Carter, Sydney Raymond, M.Sc. (Birm.), The University, Birmingham,
- 1917 Casson, Simon, B.S. Tech. Manc.), 188, Elizabeth Street, Hiel town. Manchester.
- 1917 Caunce, Albert Edward, M.Sc. Liv., 3, Commercial Place, The Parule, Mumbles, Glam. (King's Liverpool Regt.)
- 1913 Cauwood, John Douglas, M.Sc. Sheff., 40, Hampton Road, Pitsmoor, Sheffield.
- 1918 Chadwick, Robert Bertram, B.Sc.Tech. (Manc.), 3, Dudley Terrace, Leith, Edinburgh.
- 1918 Chadwick, Samuel, M.Sc. Mane., 57, Witton Road, Aston, Birmingham.
- 1918 Chambres, Rev. Gordon Crewe, M.A. Oxon., The Grammar School, Wigan.
- 1919 Chappel, Edgar John. 22/30, Graham Street, City Road, London, N. 1.
- 1918 Charlton, James, B.Sc. (Vict.), 62, Ainsdale Road, Bolton, Lanes. (2nd Lieut., R.E.)
- 1917 Charlwood, Ernest William Arthur, B.Sc. Lond , 20. Church Road, Croydon, Surrey,
- 1918 Chatt, Miss Eileen Mary, B.Sc. (Lond., 60, Claverton Street, London, S.W. 1.
- 1918 Chaumeton, Philibert Camille, B.Sc. (Leeds), c'o Mrs. Wyld, Station Road, Borrowash, Derby. (Captain, Prince of Wales' Own Yorkshire Regt.)
- 1905 Cheke, Thomas William, Beacon Villas, Station Road, Marple, Cheshire, (Corporal, R.E.).
- 1915 Cheng, Pinzen, B.Sc. (Birm.), West Gate, Kia-ting-hsien, Kiangsu. China.
- 1919 Chick, Oliver, 31, Auckland Road, Cranbrook Park, Ilford, Essex.
- 1917 China, Frederick John Edwin, B.Sc (Lond.), c'o Messrs. Burt. Boulton, and Haywood, Ltd., Prince Regent's Wharf, Silvertown, E. 16. (Captain, R.A.M.C.)
- 1919 Chitty, Edward Charles. 143, Devonshire Road, Forest Hill, Lordon, S.E. 23. (Lieut., R.E.; M.C.)
- 1918 Choate, Matthew Francis Stephen, B.Sc. (Dun.), Gorsefield, Patricroft, Manchester.
- 1917 Chorley, Perey, M.Sc. (Manc.), 15, Mile End Lane, Stockport.
- 1912 Chown, Clement Richard, B.Sc., A.R.C.S. (Lond.), 50, Craven Avenue, Ealing, London, W. 5. (Captain, R.F.A.)
- 1917 Christelow, Joseph William, B.Sc. (Lond.), No. 5, G.H.Q., School of Chemistry, Bonn, Germany. (Captain, R.E.)
- 1918 Clark, Arthur Herbert, B.Sc. (Birm.), 19. Palmyon Squar , Warrington
- 1918 Clark, Arthur Stanley, B.Sc. (Lond.), 16, Richmond Hill, Langey Green, Worcester.
- 1919 Clark Ceell Henry Pouglas, B.Sc., A.R.C.S. (Lend), Narbenne Henry, 71, Narbonne Avenue, Clapham Common, London, S.W. 4. (Lieut., R.E.)

## Date of ASSOCIATES.

- 1918 Clark, Francis William, B.Sc. (Lond.). 90, Francis Street. Leeds.
- 1918 Clark, Leslie Melville, 3, Harley Road, Hampstead, London, N.W. 3, (Major, R.A.O.C.).
- 1917 Clark, Robert, co Shaw, 23. Herriet Street, Pollokshieids, Glasgow, (Squadron Sergeant-Major, Lothian and Border Horse.)
- 1915 Clark, Walter Sydney, A.C.G.I., 81, George Street, Luton, Beds. (Corporal, R.E.)
- 1913 Clarke, Arthur Leslie Rimmer, B.Sc. (Leeds), "E" Special Company, R.E., B.E.F., France. (Major, R.E.)
- 1918 Clarke, Frederick George, B.Sc. (Lond.), 27, Ashlone Road, Putney, London, S.W. 15. (Corporal, R.A.M.C.)
- 1918 Clarke, Herbert Edmund, M.A., B.Sc. (Oxon.), 4. Selborne Avenue, Low Fell, Gateshead.
- 1918 Clayton, William. M.Sc. (Liv.), 162, North Hill Street. Liverpool.
- 1918 Clements, John Arthur. The Quintas, Spital, Chesterfield.
- 1918 Clifford, Joseph. A.R.C.S.I., The Government Analytical Laboratory, Cairo, Egypt.
- 1918 Clifford, Percy Herbert, B.Sc. (Lond.), The Acacias. Hillingdon, Middlesex. (Lieut., R.A.F.)
- 1919 Clifford, Sydney George, 51, Peak Hill, Sydenham, London. S.E. 26.
- 1917 Clotworthy, Harold Reginald Septimus, M.A. (Dub.), A.R.C.S.I., B.Sc. (Lond.), c o The British Cellulose and Chemical Manufacturing Co., Ltd., Spondon, near Derby.
- 1918 Coakill, Edgar Alfred, Maythorne, New Balderton, Newark-on-Trent.
- 1918 Cockram, Leslie, B.Sc. (Vict.), Stanley Road. Knutsford. Cheshire. (A/M II., R.A.F.)
- 1919 Cockshutt, John Albert, M.Sc. (Manc.), 27. Hornby, Street, Oswaldtwistle, Lancs. (Captain, R.G.A.)
- 1919 Cohen. Morris. B.Sc. (Lond.). 21, St. Kilda's Road. London, N. 16. (Lieut., R.A.F.)
- 1917 Colclough, Tom Peach. M.Sc. (Manc.). 174, Worksop Road, Handsworth, Sheffield.
- 1918 Coles, Leonard Arthur, B.Sc. (Lond.), Ludlow House, Wakefield Road, Huddersfield.
- 1919 Colles, William Morris. B.Sc. (Lond.). The Chemical Department, Government School of Medicine, Cairo, Egypt.
- 1917 Collins, Bert Amos, B.Sc. (Birm.), Graisley Lane, Wednesfield, Wolverhampton.
- 1919 Condrup. Carl Oscar, A.R.C.S., B.Sc. (Lond.). 4, Princes Avenue, Muswell Hill, London, N. 10. (R.E.)
- 1918 Cook, Sidney Jabez, B.A. (Toronto), 317, Queen Street. Ottawa, Ontario.
- 1917 Cooke, John Harbourne, B.A. (Dub.), A.R.C.S.I., 9. Cintra Park, Upper Norwood, London, S.E. 19. (Captain, R.G.A.)
- 1918 Coombs, Lewis Newton, B.Sc. (Lond.), Lockerley, Romsey. Hants. (Lieut., R.A.O.C.)

## Date of ASSOCIATES.

- 1918 Coomes, Arthur Nohns, 76, Wrotte-ley Road, Woolwich, Lend u, S.E. 18.
  - 1917 Cooper, Christopher, M.Se. Dun., Reckmount, 35, Hill Phys. Ardrossan, Ayrshire.
  - 1897 Cooper, William Rajs n. M.A., B.Sc. R.U.I.), A.C.G.I., 82, Victoria Street, London, S.W. 1.
  - 1919 Cooper, William Suldaby, B.Sc. (Lond.), 29, Glencoe Street, Hull.
  - 1917 Coppin, Noël Guilbert Stevenson, M Sc. Liv., 138, Greenway Road, Runcorn, Cheshire.
  - 1917 Corelli, Octavian Julius, Ph.D. Zarich, St. Talgarth Mansions, Baron's Court, West Kensington, London, W. 14.
  - 1918 Cory, Harroid Edward John, M.Sc.Tech. (Manc.), Kenwood, Lenglands Park Road, Sideup, Kent.
  - 1917 Cottrall, Leslie George, B.Sc. (Lond.), c'o Messrs. A. E. Reed & Co., Ltd., Horton Kirby Paper Mills, South Darenth, Kent. (Corporal, R.E.)
  - 1918 Couch, Daniel Little, 59, Haig Road, Plaistow, London, E. 13.
  - 1919 Course, Herbert Edwin, Water Works, Gold Coast Colony, W. Africa.
  - 1917 Cousen, Arnold, B.Sc. Lond., A.R.C.S., 27, Stokenchurch Street, Fulham, London, S.W. 6.
  - 1918 Cousins, Francis George, B.Sc. L. ud., I, St. Cuthbert's Place, North End, Durham. (Corporal, R.E.; D.C.M.)
  - 1918 Cowie, George Alston, M.A., B.Sc. (Aberd.). Rethamsted Experimental Station, Harpenden, Herts.
  - 1906 Cowie, Thomas Field, B.Sc. (Edin.), 62, Eglinton Road, Ardrossan, Ayrshire.
  - 1919 Cowper, Alfred Denys, M. Sc. (Alberta), University of Alberta, Edmonton South, Alberta, Canada. (Lieut.)
  - 1918 Crabtree, Herbert Grace, M.Sc. (Liv.), Dyeing Department, The University, Leeds.
  - 1917 Crabtree, John Wallace, M.Sc. (Manc.), c/o Miss Hawthorne, 62, Gordon Street, Burslem, Staffs.
  - 1918 Craig, Robert, Benmore, Bromborough, Cheshire.
  - 1918 Cramer, Barnett Joseph. M.Sc.Tech. (Manc.), c/o The Straits Trading Co., Ltd., Singapore.
  - 1919 Cranston, John Arnold, B.Sc. (Glas.). 453, Albert Road, Langside, Glasgow. (Lieut., R.E.)
  - 1918 Craven, William Henry, B.Sc. (Lond.), University College, Nottingham.
  - 1910 Crawford, Frederick Alexander Ferrier, B.A. (Dub.), Shiel House, Ardrossan, Scotland. (Captain, Royal Scots Fusiliers.)
  - 1917 Cremer, Herbert William, B.Sc. (Lond.), Preston Lea, Faversham. Kent.
  - 1918 Crews, Sidney Kirby. 11, Woodbury Park Road, Ealing, London, W. 13.
  - 1918 Crockatt, Arthur John, M.Sc. (Leeds), The Hollies, Old Park Road, Roundhay, Leeds.
  - 1919 Crofts, Harold, M.Sc., (Dun.) Myrtle Grove, Penwortham, Preston.

#### ASSOCIATES.

- 1919 Cronshaw. Harry Brenan, B.A. (Cantab.), Ph.D. (Munich), A.R.S.M., University, College, Galway.
- 1918 Crook, Sydney Edwin, 41, Thurlow Park Road, Dulwich, London, S.E. 21.
- 1918 Crosland, Thomas Pearson Kilner, Ebor Mount, Huddersfield.
- 1917 Cross, Samuel Moses. A.R.C.S.I., Kinnego, Killyman, Moy, Co. Tyrone, Treland
- 1913 Crosse, Frederick George, 78, Hatton Garden, London, E.C. 1.
- 1917 Crow, Alexander, B.Sc. (Lond.), 5, King's Road, Willesden Green, London, N.W. 10.
- 1918 Crowther, Edward Mortimer, M.Sc. (Leeds), 2, Wordsworth Road, Harpenden, Herts.
- 1917 Crowther, Horace Leslie, M.Sc. (Birm.), The Beeches, West Bromwich, Staffs. (Lieut., R.N.V.R.).
- 1918 Crundail, Sydney Francis William, A.C.G.F.C., 28, Marlborough Hill, Harrow. (R.E.).
- 1917 Cumming, William Murdoch, B.Sc. (Glas.), Dalton Grange. Huddersfield
- 1919 Cunnington Francis William Buckland, B.Sc. (Lond.), Heytesbury, 88, West End Lane, London, N. W. 6. (Lieut., R.A.S.C.)
- 1917 Curtis, Raymond, M.Sc. (Sheff.). Highfield, Leek, Staffs.

## D

- 1919 Dalton, John, co Messrs, Robert Roxburgh Ltd., British Post Office, P. O. Box No. 292, Shanghai, China. (Captain, R.A.M.C.; M.C.)
- 1918 Daly, Arthur John, B.Sc. (Lond.), 21, Princess Road, Borrowash, Derby.
- 1919 Damon, William Aethelbert, B.Sc. (Birm.), 17a, Kidbrooke Park Road, Blackheath, London, S.E. 3.
- 1919 Dancaster, Ernest Augustus. B.Sc. (Lond.) Pleasant View, 101, Merton Hall Road, Wimbledon. London, S. W. 19. (R.N. Experimental Station.)
- 1918 Dargie, Andrew. B.Sc. (St. Andrews), 140, Perth Road, Dundee.
- 1919 Davies, James Henry, Pumula, Heswall Hills, Nr. Birkenhead.
- 1917 Davies, Richard Owen, B.Sc. (Wales), Messrs. Nobel's Explosives Co., Ltd., Ardeer, Stevenston, Ayrshire.
- 1919 Davies, Thomas, B.Sc. (Wales), Penbank, Clydey, Llanfrynach, S. O., Pembrokeshire. (Lieut., R.E.)
- 1918 Davies, Thomas Ellis, B.A. (Oxon.), Bryn Ial, Rhosddu, Wrexham, N. Wales.
- 1918 Davies, Thomas Eynon, B.Sc. (Wales), 11, Herbert Street, Aberdare.
- 1918 Davies, William Eynen, E.Sc. (Wales), 113, Earlham Grove, Forest Gate, London, E. 7. (Cadet, R.F.A.)

## Date of

#### ASSOCIATES.

- 1918 Davies, William Morley, B.Sc. (Birm.), Folley, Lydbury North-Shropshire.
  - 1917 Davison, William, B.Sc. (Lond.), 25A, Hervey Road, Blackheath, London, S.E. 3.
- 1918 Dawson, James Muirie, Kilrenny, Calder Road, Mossend, Lanarkshire.
- 1917 Dawson, Reginald David, B.Sc. (Aberd.), Uplands, Feltham, Middlesex.
- 1911 Day, Frank Edward, B.Sc. Lond), co The Condensed Milk Company of Ireland, Lansdowne, Limerick.
- 1919 Day, James Nelson Edmund, A.R.C.S., B.Sc. (Lond.), 24, Marlborough Road, St. Albans, Herts.
- 1918 Dean, Harry Fitz-Gibbon, M.Sc. (Bris.), 57, Ashley Road, Bristol.
- 1919 Dehn, Frank Bernard, Ph.D. (Jenn), M.St. Manch, Bridge House, 181, Queen Victoria Street, London, E.C. 4.
- 1918 Denbigh, George James, B.Sc. (Leeds , Medlock House, Oxford Street, Workington,
- 1918 Dewar, George, 14, James Street, Falkirk.
- 1918 Dick, James Scott, B.Sc. (St. Andrews), 6, Blendon Terrace, Plumstead, London, S.E. 18.
- 1918 Dingley, Cyril Stanley, Hill Court, Fladbary, Worcestershire, (Sergeant, Worcester Yeomanry.)
- 1914 Dingwall, Andrew, 24, Dalnair Gardens, Glasgow, W. (2nd Lieut., attached R.E.)
- 1918 Dixon, Norman, A.M.S.T., 92, Crondali Street, Mess Side, Manchester,
- 1918 Dixon, Stanley, M.Sc. (Sheff.), Strathish House, Wincobank, Sheffield. (R.N.V.R.)
- 1918 Dodd, Alfred Herbert, B.A. (Cantab.), 129, Burton Road, Brixton, London, S.W. 9. (2nd Lieut. Unattached.)
- 1918 Dodgson, John Wallis, B.Sc. (Lond), University College, Reading,
- 1913 Doidge, Russell Mervyn, B.S.; (Lend.), 2sa, Lorisville Road, Balham, London, S.W. 17. (Flight-Cadet, R.A.F.; D.C.M.)
- 1917 Donaldson, James William, B.Sc. Edin., 63, Finlay Drive, Dennistean, Glasgow.
- 1918 Done, Edward, M.Sc. Birm.), 390, Slade Road, Erdington, Birmingham,
- 1917 Doran, William, B.Sc. (Liv.), 32. Ruff and Road, Fairfield, Liverpool.
- 1918 Doughty, Walter David, "Fairview," Hansol Road, Bexley Heath.
- 1918 Dougill, George, M.Sc. (Leeds), Royd Horse, Heckmondwike, Yorks,
- 1918 Dovey, Ernest Roadley, A.R.C.S. (Lond.), Government Laboratory, Hong Kong.
- 1919 Dowdall, John Patrick Mitchell. A.R.C.S., D.I.C., B.Sc. (Lond.), 11, Princeton Mansion, Red Lion Square, London, W.C. 1. (Oaptain, R.A.M.C.)
- 1918 Downing, James, junr., B.Sc.Tech. (Manc.), 21, Thornwood Road, Manor Park, Lee, S.E. 13.
- 1918 Downs, Edmund, M.Sc. (Manc.), M. u. t. St. L. cw. et a. Holmes Chapel. Cheshire.

#### Date of A im ssion

#### ASSOCIATES.

- 1917 Doyle, Arthur Lawton, B.Sc. (Manc.), 64. Ellesmere Road, Lower Walton, nr. Warrington.
- 1918 Drakeley, Thomas James, M.Sc. (Lond.), 108, Salcott Road, Wandsworth Common, London, S.W. 11.
- 1919 Drew, Harry Dagald Keith, M.Sc. (Lond.), 94, Cambridge Street, Warwick Square, London, S.W. 1. (Petty Officer, R.N. Experimental Station.)
- 1919 Druce, John Gerald Frederick, B.Sc (Lond.), 26, Heslop Road, Balham, London, S.W. 12.
- 1917 Drummond, Alan Ashby, M.Sc. (Manc.), 1, Fairhaven Mansions, Lowther Hill, Forest Hill, London, S.E. 23.
- 1919 Deummond, John Malcolm, M.Sc. (Vict.), 61, Peak Hill, Sydenham, London, S.E. 26.
- 1917 Dunn, Frederick Percy, B.Sc. (Manc.), 20. Hillbury Road, Tooting Common, London, S.W. 17.
- 1918 Dunningham, Alfred Charles, D.Sc. (Lond.), Ashville, Middlewich, Cheshire.
- 1917 Dunsmore, Adam, 24, Polwarth Gardens, Edinburgh. (Corporal, R.E.)
- 1914 Dutt. Pavitra Kumar, M.A., B.Sc. (Calcutta), M.Sc. (Leeds), 16, Vernon Road, Leeds.
- 1919 Dutton, Frank, B.Sc. (Viet.), 102, Woodwarde Road, E. Dulwich, London, S.E. 22.
- 1918 Dyer, Alfred, B.Sc.Tech. (Manc.), 7, Chaucer Street, West Cott Street, Hull. (2nd Lieut. R.A.F.)
- 1919 Dyer, Joseph William Ward, B.Sc. (Lond.), 22, Grange Road, Gravesend, Kent.
- 1918 Dymond, Francis John, B.Sc. (Bris.), 6, Lockyer Street, Plymouth.

## E

- 1918 Eastburn, Wilfred James Stevenson, Towerville, Helensburgh, Dumbartonshire, (Cadet, O.C.B.)
- 1918 Eastick, Arthur Gerald, 137, Upper Clapton Road, London, E. 5. (King Edward's Horse.)
- 1018 Ellistick, Frederick Charles, M.A. (Cantab.). Malford Lodge, Snaresbrook, London, E. 18.
- 1918 Eastick, John Clare Newlands. 137, Upper Clapton Common, London, E. 5. (Captain, Commandant, Irish Command Gas School.)
- 1918 Ebrill, George, B.A. (R.U.I.), 22, Leeson Park Road, Dublin.
- 1917 Edwards, John, B.Sc. (Birm.), c/o Messrs, Smith, Davies & Co., Solicitors, Aberystwyth.
- 1917 Elberne, Sydney Lipscomb, M.B.E., M.A. (Cantab.), No. 6. Crown Office Row, Inner Temple, London, E.C. 4.
- 1919 Ellingham, Harold Johann Thomas, A.R.C.S., B.Sc. (Lond.), 34, Lausanne Road, Hornsey, London, N. 8.

## Date of Associates.

- 1917 Ellington, Oscar Charles, B.A. (Oxon.), 9, Norfolk Street, Peterbor ugh.
  - 1917 Elliott, Joseph Campbell, A.R.C.S.L. B.Sc. (Lond.), Merbert House. 75, Pembroke Road, Dublin. (Lieut., R.E.; M.C.)
  - 1919 Ellis, Bernard Albert, B.A. (Cantab.), 4, Mount Adon Park, Dulwich, London, S.E. 22. (R.E.)
  - 1918 Ellis, George William. B.Sc. (Lond.), c.o. Controller of Salvage, G.H.Q.. France. (Major, D.A. Controller of Salvage; mentioned in despatches.)
  - 1919 Elphick, Frederick Charles, 50, College Court, Hammersmith, London, W. 6.
  - 1918 Elsey, Edwin, B.Sc. (Birm.), 4, Herbert Road, Southall, Middlesex.
  - 1919 Embleton, Arthur, M.Sc. Tech. (Manc.). 13, Fir Street, Walsden, nr. Todmorden.
  - 1919 Emerson, Frederick William, A.M.C.T., 178, Heaton Moor Road, Heaton Moor, nr. Stockport.
  - 1919 English, Ernest Walter Fulton, M.A. (Cantab.), Directorate of Chemical Inspection, Royal Arsenal, Woolwich, London, S.E. 18.
  - 1918 English, Solomon, M.Sc. (Sheff.), High Street, Clowne, Chesterfield.
  - 1913 Esling, Fred, A.C.G.I., 36, Kenilworth Court, Putney, London, S.W. 15.
  - 1918 Essery, Reginald Ernest, B.Sc. (Bris.), 47, Hamilton Road, Southville, Bristol. (R.E.)
  - 1918 Evans, David Thomas. B.Sc. (Wales), County School, 3, West Street, Whitland, S. Wales. (Corporal, R.E.)
  - 1919 Evans, Edgar, B.Sc. (Lond.), 5, St. John's Road, Plumstead Common, London, S.E. 18.
  - 1917 Evans, Evan Thomas, B.Sc. (Wales), 11, Bowling Green Avenue, Kettering, Northants.
  - 1918 Evans, Frederick Page. B.Sc. (Lond.), epo 27, Albert Square, Clapham Road, London, S.W. 8.
  - 1917 Evans, Harold Edward, B.Sc. (Birm.), 32. Oppidans Road, Primrose Hill, London, N.W. 3.
  - 1918 Evans, Henry Jackson, B.Sc. (Lend.), Taormina, Burden Lane, Cheam, Surrey.
  - 1918 Evans, Horace George, B.A. (Otton.), B.Sc. (Birm.), 114, Ston. Road, Longton, Stoke-on-Trent. (2nd Lieut., O.T.C.)
  - 1917 Evans, Lincoln Wycherley, B.Sc. (Wales), Belmont, West Lud, Whitchurch, Salop. (Major, M.G. Corps; M.C.; mentioned in despatches).
  - 1918 Evans, Percy Edwin, M.A. (Cantab.), St. Medurds, S6. Chester in R. ad. Cambridge.

## F

1917 Fairbourne Arthur, M.Sc. (Manc.), 8, Victoria Road, Withington, Manchester.

- 1918 Fa.rbrother. Thomas Harold. M.Sc. (Manc.). The Orms, Spring Bank. Wigan.
- 1904 Fairhall, Edwin Jesse, A.C.G.I., Lindfield, Windmill Lane, Southall, Middlesex.
- 1918 Fallows, Leonard, B.A. (Cantab.). c/o Messrs. Squire & Sons, 413, Oxford Street, London, W. 1.
- 1918 Farmbrough, Alfred, 259, Lewisham High Road, London, S.E. 4.
- 1918 Farmer, Ernest Harold, B.Sc. (Lond.), The Heath, Shackerstone, Nuneaton, (Lieut., Loyal North Lancs, Regt.)
- 1917 Farrar, Stanley Campbell. B.Sc. (Lond.). D.I.C.. 2. Dryden Place, Newington, Edinburgh.
- 1917 Fearon, William Robert, B.A., B.Sc. (T.C.D.), The Bio-Chemical Laboratories, Cambridge.
- 1918 Ferguson, James, Mountside, Prestwich Park South, Manchester.
- 1919 Ferguson, John Martin, Craigengar, Dalry Road, Beith, Scotland.
- 1918 Ferlie, Robert, B.Sc. (Edin.). The Leather Cloth Co., Ltd., West Ham, London, E. 15. (R.E.)
- 1918 Fermor, Herbert Frederick Francis Burdett, 32, Trossachs Road, East Dulwich, London, S.E. 22.
- 1918 Ferraboschi, Frederic, M.A. (Cantab.), 21. Lawrie Park Road, Sydenham, London, S.E. 26.
- 1918 Fielden, Harold, B.Sc. (Leeds), c o South African Alkali, Ltd., c o Messrs. Kynoch, Ltd., Umbogintwine, Natal, South Africa.
- 1903 Fielding, John Frederick Percival, 25, Southampton Buildings, London. W.C. 2. (Squadron Sergeant-Major, County of London Yeomanry.)
- 1919 Figg. Eric Francis. 31. Elm Road, East Sheen, London, S.W. 14. (Sergeant, R.E.)
- 1918 Findley, Albert Edward, B.Sc. (Birm.), 12, Violet Bank Road, Sheffield.
- 1918 Fine. Isedor, B.A. (Cape of Good Hope), c/o Mrs. Kaplan, 6, Caledonia Road, Glasgow, S.S.
- 1918 Firth, James Brierley, M.Sc. (Manc. and Dun.), Chemical Department, University College, Nottingham.
- 1918 Fisher, Alfred, B.Sc (Lond.), Midland Coal Products, Ltd., Colliery Offices, East Kirkby, Notts.
- 1919 Fleet, William Frederick, B.Sc. (Lond.), Ivy Cottage, Hewell Road, Burnt Green, nr. Birmingham. (R.F.)
- 1919 Fleming, Robert, A.R.C S.I., c o J. White, Esq., Shankill, Dublin.
- 1919 Fletcher, Dugald Niel, A.R.T.C., Little Aiden, Kilcreggan, Dumbartonshire. (R.E.).
- 1918 Fletcher, James, M.Sc. (Vict.), Messrs, Titanine, Ltd., Booth Road, Colin Deep Lane, Hendon, London, N.W. 9.
- 1918 Forbester, Robert Edward, M.Sc. (Dun.). c o Messrs. J. W. Roberts, Ltd., Armley, Leeds.
- 1918 Forster, Aquila, M.Sc. (Dun.), Ph.D. (Freiburg), Research Department, Royal Arsenal, Woolwich, London, S.E. 18.

## Date of

### ASSOCIATES.

- 1917 Forsyth, William Collins, M.A. (Edin.), B.Sc. (Glas.), 321. New City Road, Glasgow. (Corporal, R.E.)
- 1915 Foster, Henry Stennett, 21, Fitzwilliam Street West, Huddersfield.
- 1917 Fowweather, Frank Scott. M.Sc. (Liv.), 62, Dale Street, Liverpool.
- 1918 Francis, Arthur Clarence, 41, St. John's Park, Blackheath, London, S.E. 3.
- 1902 Franck, Charles Edward, Shropshire Maltings, Shrewsbury.
- 1918 Freeborn, Albert, 25, Seyssel Street, Cubitt Town, London, E. 14.
- 1917 Frith, James Stretton, Ascog. Thelwall. Warrington, Lancs. (Major. S. Lancs. Regt.; mentioned in despatches.)
- 1919 Froysell, Herbert Henry, 66, Hartington Road, Liverpool.
- 1918 Fuller, Cyril Duncan, c., Aspinall's Enamel, Ltd., Gordwood Road, New Cross, S.E. 14.
- 1918 Furlong, John Ralph, Ph. D. (Wirzburg), 75, Swinderby Road, Wembley, Middlesex.
- 1918 Fyfe, Alexander Walker, M.A., B.Sc. (St. Andrew's), 34, Arnold Street, Huddersfield,

## G

- 1918 Gale, Robert Coeil, A.C.G.I., Chemistry Branch, Ordnance College, Red Barracks, Woolwich, London, S.E. 18. (Lieut., R.G.A.)
- 1919 Gale. William John, B.Sc. (La.d.), 50. Stant in Road, Wimbledon, London, S.W. 19. (R.E.)
- 1908 Gammon, Henry Leenard, 6, Clephane R ad, Canonbury, London, N. 1.
- 1918 Gant, Thomas Harold, A.R.C.S. (Lond.), 26. The Ridge, East Riggs, Dumfriesshire.
- 1918 Gard, John Stanley Fabian, B.Sc. (Dun.), 25. Station Road, Washington, Co. Durham.
- 1918 Gardher, Mrs. Gladys Emma Peuce, B.Sc. (Lend.), 3a, White Gables, Wood Vale, Forest Hill, London, S.E. 23.
- 1909 Garland, Charles Sannael, B.Sc., A.R.C.S. (Lond.), 57, Garratt Lane, Wandsworth, London, S.W. 18.
- 1918 Garner, Frederic Horace, M.Sc. Birm. . 5, New Road, Blackwater, Hants.
- 1919 Garner, John Henry, B Sc. (Lond), Sewage Disposal Works, Deighton, Huddersfield.
- 1918 Garrard, Stanley Frederick, M.Sc. (Manc.), Long Stratton, Norfolk.
- 1904 Garratt, Ernest, M.Sc. (Vict. and Liv.), 137, Livingston Avenue, New Brunswick, N.J.
- 1918 Garratt, Walter Reginald, M.Sc. (Sheff.), 128, Blair Athol Road, Sheffield.
- 1918 Gaskeli, Sam, B.Sc. (Viet.). 27. Cawdor Road, Fallowfield, Manchester (Lieut., R.E.)
- 1905 Gateeliff, John, jun., B.Sc. (Vict.), 3, St. Andrew's Street, Rugby.
- 1919 Gatehouse, Frank Brooks, Maristowe, Butts Green Road, Hornehurch, Essex.
- 1918 Gaunt, Percy, The Grove, Didsbury, Manchester.

- 1918 Geake, Arthur. M.Sc. (Bris.), No. 6, Research Laboratories, Messrs. Levinstein, Ltd., Blackley, Manchester. (Corporal, R.E.)
- 1917 Geake, Frank Henry, M.Sc. (Bris), 147, Cromwell Road, Bristol. (Captain, R.E.)
- 1918 Geary, Samuel Thomas Talmage, B.A. (Cantab.), 139, St. Paul's Road, Smethwick,
- 1917 Gee, Frank Houghton, B.A., B.Sc. (Oxon.), SS. Abingdon Road. Oxford.
- 1918 Gee, John Hargrave, B.Sc. (Birm.), 433. Alum Rock Road. Saltley.
- 1918 Genders, Reginald. B.Met. (Sheff.), 84. Willington Road, Charlton, London, S.E. 7.
- 1918 George, Herbert John, B.A. (Oxon), Ministry of Munitions, Explosives
  Dept., Storey's Gate, Westminster, London, S.W. 1. (Lieut.,
  Royal Welsh Fusiliers.)
- 1911 Georgi, Charles Denis Victor, O.B.E., B.Sc. (Lond.), Elm L. Jge, Golders Green, London, N.W. (Captain, R.E.: mentioned in despatches.)
- 1889 Gibbins, Cecil, 9, Dundonald Road, Redland, Bristol.
- 1908 Gibbon, John. c.o Neilson, 13, Scioncroft Avenue, Rutherglen, Glasgow.
- 1919 Gibbs, George Reginald, M.A., B.Sc. (Manc.), Oakleigh, Bath Road, Stourbridge. (a/Captain, R.E.)
- 1917 Gibbs, William Edward, D.Sc. (Liv.). The Salt Union. Weston Point.
- 1919 Gibson, Stanton, B.Sc. (Lond.), 3, Oakfield Road, Stroud Green, London, N. 4. (Captain, Army Cyclist Corps; mentioned in despatches.)
- 1917 Gibson, William Howieson, M.B.E., D.So. (Lond.), 23a. Wellington Road, Old Charlton, Kent.
- 1918 Giffen, William Edward, B.Sc. (Lond.), 8. Victoria Road, Harborne, Birmingham.
- 1918 Gifford, Edgar Crathorne, B.Sc. (Bris.), 30, New North Read, Huddersfield, Yorks,
- 1919 Gilbert, Lionel Felix, B.Sc. (Lond.), Frogmore, Beaconsfield, Bucks. (Captain.)
- 1919 Gilchrist, Miss Elizabeth, B.Sc. (Edin.), 9, Duncan Street, Edinburgh.
- 1919 Gill, Amos, B.Sc. (Manc.). 14, Wilson's Terrace, Broughton Moor, nr. Maryport, Cumberland.
- 1907 Gillespie, Robert, B.Sc., A.R.C.S. (Lond.). 222. Albert Road, Langside, Glasgow.
- 1917 Gilmour, George Van Barneveld, B.Sc. (Lond.), A.R.C.S.L. 48, Cherington Road, Hanwell, London, W. 7.
- 1912 Gilmour, Hugh. Garple, Monreith Road. Newlands, Glasgow. (2nd Lieut., South Lancs. Regt.)
- 1918 Girton, Miss Annie Phœbe, B.Sc. (Lond.), 611. Quentin Road, Blackheath, London, S.E. 13.
- 1919 Girvan, Arthur Frank. B.Sc. (Lond.), 126, Thornlaw Road, West Norwood, London, S.E. 27. (Captain, R.A.M.C.; mentioned in despatches.)

- 1918 Gladding, Geoffrey, M.Sc. (Manc.), 4. Heaton Road, Heaton North. Stockport.
- 1919 Glasstone, Samuel, B.Sc. (Lond.), 65, St. George Street, London, L. I
- 1906 Glen, George William, 256, Darmey Street, Pollokshields, Glasgow,
- 1918 Clendinning, William Gerald, B.A. (R.U.L.), B.S. (Q.U.B.), 9, Churdle Circle, Farnborough, Hants. (Corporal, R.E.)
- 1919 Glover, Arthur, M.Sc. (Mane.), 37, Grasmere Road, Clerksfield, Oldham, Lancs.
- 1948 Goddard, Archibald Edwin, B.Sc. (Birm.), 94. Barclay Street, Fesse Roal, Leicester.
- 1914 Goddard, Ernest Donald, B.S., (Londo, 37, A. wyn Avenue, Chiswick, London, W. 4.
- 1917 Goldsmith, Leon Daniel, B.Sc., A.R.C.S. (Lond.), c/o The Osram-Robertson Lamp Works, Ltd., Brook Green, Hammersmith, London, W. 6.
- 1917 Gollop, Harry, B.Sc. (Wales), Park View Villa, Jarrow-on-Tyne.
- 1918 Gordon, Peter Ferguson, 75, Argyle Cresent, Portobello, Edinburgh.
- 1917 Gesney, Harold William, B.Sc. (Lond.), Fern Bank, 44, Addiscomb Road, Croydon, Surrey. (Captain, Rifle Brigade; M.C.)
- 1917 Goulston, William Wolf, B.A. (Cantab.), B.Sc. (Lond.), The Reinery, Suez, Egypt.
- 1918 Graham, Hugh, B.Sc. (Q.U.B.), 125, Wellesley Avenue, Belfast, Ireland,
- 1915 Graham, Joseph, B.Sc. (Dun.), The Chemical Laboratory, Elswick Leather Works, Newcastle-on-Tyne.
- 1918 Graham, Joseph Ivon, B.A. (Cantab.), B.Sc. (Lond.). A.R.C.S.I., Doncaster Coal Owners' Laboratory, Bentley Colliery, Doncaster. (Friends' Ambulance Unit.)
- 1919 Grant, Donald, M.A. (Edin.), 114, Findhorn Place, Edinburgh.
- 1917 Gray, George, M.Sc. (Liv.), e.o Messrs. Lever Bros., Ltd., Pert Sunlight, Cheshire. (Staff-Captain; mentioned in despatches.)
- 1919 Gray, Harold Heath, B.Sc. (Manc.), Birdwell, nr. barnsley, Yorks.
- 1918 Gray, Walter Stroulger, B.Sc.Agric, (Lond ), Robsacks Wve, Kent
- 1918 Green, Fred, B.Sc. (Sheff.), 64, Chequer Road, Doncaster, Yorks.
- 1918 Green, Stanley Joseph, M.A. (Cantab), Royal Nava, Experimental Station, Stratford, London, E. 15. (Lieut., R.N.V.R.)
- 1918 Greenwood, Maurice, B.A. (Oxon.), 15, Toller Prive, Bradford, Yornshine
- 1919 Gregory, Arnold William, B.Sc. (Lond), 50 Croom's Hill, Greenwich London, S.E. 10.
- 1917 Griffith, Robert Owen, M.Sc. (Liv.), 71, Park Read, Wallas y. Cleshire (2nd Lieut., R.A.F.)
- 1918 Griffiths, Edward Landseer Parry, B.Sc. (Sydney), Chemist's boatch Department of Agriculture, George Street N., Sydney, Australia.
- 1919 Griffiths, Evan Dalton, B.Sc. (Wales, 9, Wanstead Park Avenue, Manor Park, London, E. 12.

## ASSOCIATES.

- 1919 Griffiths, George Eric, 5, Bertram Road, Manningham, Bradford, Yorks.
- 1917 Griffiths, Thomas Owen, B.Sc. (Lond.), Hazelwood, Erskine Road, Colwyn Bay.
- 1918 Griffiths-Jones, Ernest, M.Sc. (Manc.), Public Health Laboratories, Cairo, Egypt.
- 1919 Grisenthwaite, Arthur Turner, B.Sc. (Lond.), A.C.G.I., 9, Chareview Road, Streatham, London, S.W. 16.
- 1919 Groves, Miss Ruby Caroline, M.Sc. (Birm.), 39, Earlsbury Gardens, Handsworth, Birmingham.
- 1918 Gue-t. Peter Healey, M.A., B.Sc. (Manc.), Ingleside. Orrell Mount, Wigan. (Lieut., A.O.D.)
- 1919 Guy, William Robert, 413, Quentin Road, Blackheath, London, S.E. 13.

## H

- 1917 Hackney, Norman, B.Sc. (Lond.), Rafiya Margil, Wodehouse Road, Bombay. (Lance-Corporal, Middlesex Regt.)
- 1919 Huddon, Cuthbert Leslie, B.Sc. Dun.), Silverhill, Denton Burn, Newcastle-on-Tyne.
- 1918 Hadfield, John, M.Sc. (Sheff.), 9, Christchurch Road, Sheffield.
- 1918 Haigh, Thomas, A.R.C.S.I., B.A. (N.U.I.), Chemical Research Department, King's College, Strand, W.C. 2. (Lieut., Royal Dublin Fusiliers: mentioned in despatches.)
- 1918 Haigh, William D., B.A., B.Sc. (N.U.I. and R.U.I.), A.R.C.S.I., Chemical Department, King's College, Strand, London, W.C. 2.
- 1919 Hall, Archibald Alexander, M.Sc., Ph.D. (Jena), Agricultural Department, Armstrong College, Newcastle-on-Tyne, (Captain, S. Staffs, Regt.)
- 1917 Hall, Archibald John, B.Sc. (Lond.), c/o Silver Springs Bleaching and Dyeing Co., Timbersbrook, Congleton, Cheshire.
- 1919 Hall, Edward Herman, B.Sc. (Lond.), 190, Greenvale Road, Eltham, London, S.E. 9.
- 1917 Hall, Eric Morgan, B.Sc. (Birm.), Montrose, Brayton Road, Selby, Yorks.
- 1917 Hall, Horace Campbell, 57, Wilfred Street, Derby.
- 1919 Hall. Norman. Ravensdale, Walmersley Road, Bury, Lancs. (Captain, Lancs. Fusiliers.)
- 1918 Hamer, Miss Frances Mary, B.Sc. (Lond.), Girton College, Cambridge.
- 1919 Hamilton, John Campbell, A.M.S.T., 22, Brunel Street, Burnley, Lancs.
- 1917 Hamilton, Robert Russell, M.A., B.Sc. (Glas.), 7, Willow Lane. East Huddersfield.
- 1918 Hammond, David William, B.Sc. (Glas.), 126, Monica Road, Small Heath, Birmingham.
- 1917 Hampson, Robert Ernest Victor, D.Sc. (Liv.), National Filling Factory, White Lund, Morecambe. (Captain, R.E.)

- 1918 Hanna, Godfrey FitzGerald, B.A. (Cantab.), Carrick, Esher, Surrey. (British Red Cross—Active Service.)
- 1909 Harding, Victor John, D.Sc. (Vict.), Department of Physiological Chemistry, McGill University, Montreal.
- 1919 Hardman, Benjamin, 29, Graham Road, Wealdstone, Middlesex.
- 1919 Hardwick, Walter Arthur Nelson, A.R.C.S., 26, West Kensington Mansions, W. Kensington, London, W. 14.
- 1918 Hargreaves, Frank, A.R.S.M., Laboratory, Ashford Works, S.E. & C. Rly, Co., Ashford, Kent.
- 1918 Hargreaves, George Watson, M.Sc. (Queensland), "Waratah," Quarry Street, Ipswich, Queensland, Australia.
- 1917 Harler, Campbell Ronald, B.Sc. (Loud.), 19, Mulgrave Place, Woolwich, London, S.E. 18.
- 1919 Harper, Harry, A.R.C.S., B.Sc. (Lond.), 7, Selborne Grove, Keighley, Yorks.
- 1917 Harrap, Frank Nettlecon, B.Sc. (Leeds). Directorate of Chemical Inspection, Wellesley House, Red Lion Lane, Woolwich, London, S.E. 18.
- 1919 Harris, Charles, L.R.C.P., L.R.C.S. (Edin.), A.R.T.C. (Glas.), 41, Fo. syth Street, Greenock, Scotland. (Captain, R.E.)
- 1919 Harris, John Edmund Guy, B.Sc. (Lond.), 20, Eltisley Avenue, Newnham, Cambridge. (Sergeant, R.A.M.C.)
- 1918 Harrison, George Frederick, A.R.C.S.L. 78, Hollybrook Road, Clonter, Dublin.
- 1918 Harrison, John Vernon, B.Sc. (Glas.), 34, Rowallan Gardens, Partick, Glasgow. (Lieut., R.E.)
- 1918 Harrison, Miss Sophy M., British Alizarine Co., Ltd., Silvertown, Victoria Docks, London, E. 16.
- 1918 Harrold, Archibald, 7, Pretoria Road, Cambridge.
- 1918 Harry, Frederick Thomas, 92, Rodenhurst Road, Clapham Park, London, S.W. 4.
- 1917 Hartley, Harold, M.Sc. (Manc.), The Gables, Lymm, Cheshire.
- 1918 Hartley, John Alfred, M.Sc. (Leeds), Cowick Grange, Snaith, Yorks.
- 1888 Harvey, Henry Cummins, c. Messrs, Fothergill and Harvey, Ltd., 31, Cooper Street, Manchester.
- 1917 Hurwood, Henry Franci-, M.Sc. (Manc.), Ph.D. (Heid.), The R yal College of Science, London, S.W. 7.
- 1918 Harwood, Samuel Davenport Fairfax, The Royal C llege, Curepipe, Mauritius.
- 1919 Haselhurst, Herbert William Reay, B.Sc. (Dun.), 35, Cyril Mansi as, London, S.W. 11, (Major, R.A.F.)
- 1918 Hastilow, Cyril Alexander Frederick, B.Sc. (Birm.), 162, Brighten Road, Moseley, Birmingham. (Sergeant, R.E.)
- 1917 Hatton, Arthur Barker. B. Sc. (Manc.), 50. The Crescent. Leftwich, Northwich, Cheshire. (Captain, R.A.F.)

- 1918 Haward, William Arthur, B.Sc. Lond.), A.R.C.S., D.I.C., 4, Gatcombe Road, London, N. 19.
- 1.31. Hawley, John William, B.Sc. (Lond.), 20. Trongate, Glasgow. (Lieut., H.L.I.)
- 1918 Hay, Neil Thomson, Laboratory Department B. Castle Mills, Edinburgh. (H.L.I.)
- 1959 Hav. Robert, 72, The Rand, Eastriggs, Dumfriesshire.
- 1918 Haynes, Miss Dorothy, B.Sc. (Lond.), 22, St. Mary Abbott's Terrace. Kensington, London, W. 14.
- 1917 Haythornthwaite, Alan. B.Sc., A.R.C.S. (Lond), 62, North Side. Clapham Common, London, S.W. 4. (Lieut., R.F.A.)
- 1917 Hazel, Hubert Henry, B.A. (Cantab.). Caradoc, Balmoral Road. Parkstone, Dorset.
- 1918 Heasman, Benjamin Richard, B.Sc. Lond., Rutherglen, Throwley Road, Sutton, Surrey. (Sergeant, R.E.)
- 1915 Hedley, Edgar Percy, Ph.D. (Leipzig), A R.C.S.I., 1, Chesterfield Villas, Victoria Avenue, Borrowash, near Derby.
- 1917 Hegan, Horace James, B.Sc. (Lond.), Spring House, Radford Road, Coventry.
- 1918 Henesey, Fred. B.Sc. (Liv.), 17. Nile Street, Gt. George Street, Liverpool. (Sergeant-Instructor R.E.)
- 1918 Henry, Albert Victor, A.R.C.S.I., 3J. Bridge Street, Baliymena, Co. Antrim.
- 1917 Hensteck, Herbert, M.Sc. (Vict.), Ph.D. (Zurich), Chemical Research Laboratory, School Gardens, Shrewsbury.
- 1908 Hepburn, Andrew, co Smyth, Laggan, Clyde Place, Perth.
- 1918 Herbert, Alfred Edwin, B.Sc. (Wales), Cromwell House, Central Avenue, Gt. Wigston, Leicester.
- 1919 Herbert, George Girvan, 16, Bank Street, Glasgow, W.
- 1918 Hewitt, James Arthur, B.Sc. (St. Andrews), Physiology Department,
  Butt Medical Buildings, The University, St. Andrews, (Major,
  Chemical Adviser).
- 1948 Hibbert, John, 34, Cromwell Grove, Levenshulme, Manchester. (Captain, R.A.F.)
- 1919 Hickman, Kenneth Claude Devereux, A.R.C.S. (Lond.: Southover Wendover Road, Bromley, Kent.
- 1918 Hicks, Cedrie Stanton, M.Sc. (Otago), Ravensborne, Dunedin, Otago, New Zealand.
- 1918 Hickson, Bernard, M.Sc. Leeds, Cedar Lawn, Ackworth, near Ponte-fract. (Lieut., Yorkshire Regt.)
- 1917 Higson, Geoffrey Isherwood, M.Sc. (Liv.), c'o The British Photographic Research Association, Chemical Laboratories, University College, Gower Street, London, W.C. 1. (R.E.)
- 1918 Hill, James, B.Sc. (Leeds), 34, Woodlands Road. Cheetham Hill-Manchester.
- 1919 Hill, John Isaacs, 75, Claremont Road, Forest Gate London, E. 7. (R.E.)

- 1918 Hillman, Eric Stanley, B.Sc. (Lond.), 38, Westbourne Gardens, London, W. 2.
- 1917 Himus, Godfrey Wilfred, B.Sc., A.R.C.S. (Lond.), Esteourt, Arthur's Hill, Shanklin, Isle of Wight. (Sergeant, R.E.)
- 1919 Hind, Stanley Reginald, B.Sc. (Lond), A.R.C.S., 19, Eardley Crescent Earl's Court, London, S.W. 5. (King's Shropshire Light Infantry.)
- 1917 Hiscock, Walter George, B.Sc. (Lond.), Craigview, Ardrossun R. ad, Saltocats, Ayrshire.
- 1918 Hislop, Charles Andrew, 7, The Ridge, Eastriggs, Dumfriesshire
- 1918 Hitchins, Miss Ada Florence Ramfray, B.Sc. (Glas., 130, Cambride Drive, Kelvinside North, Glasgow.
- 1918 Hoare, Arthur Charles, A.R.S.M., D.I.C., 63, Englewood Road, Claphain Common, London, S.W. 12.
- 1918 Hobson, Arthu Bertram, M.Sc. (Viet.), Hollybrooke, 6. West View, Highgate Hill, London, N. 6. (Captain, R.E.)
- 1918 Hodgkin, Adrian Eliot, Brook House, Woodford Green, Essex. Major. R.E.: M.C.)
- 1918 Hodkin, Frederick William, B.Sc. (Sheff.). 28, Theresby Road, Hillsbro', Sheffield.
- 1919 Holderoft, Arthur Douglas, Wavertree, Bradwell Lane, Porthill. Stokeon-Trent.
- 1918 Holden, Frank, B.A. (Cantab., 51, Colne Road, Barneldswick, cid. Colne.
- 1918 Holden, Thomas Halstead, M.Sc. (Liv.), 16, Hillside Road, Waliasey, Cheshire.
- 1919 Hole Ernest George, B.Sc. (Birm.), 62, Leyland Road, Le., London, S.E. 12.
- 1918 Hollings, Harold, M.Sc. (Leeds), 40. Tyrwhitt Road, Brockley, London, S.E. 4.
- 1919 Holmes, Edgar William, 4, Mossey Street, St. George's Road, Hull.
- 1917 Holroyd, Thomas Arthur, M.Sc. (Leeds), Hangingstone, Ilkley, Yorkshire.
- 1917 Holt, Fred, O.B.E., M.Sc. (Manc.), 146, Greenway Road, Runcorn, Cheshire.
- 1918 Hopkins, David Graham, B.Sc. (Lond.), A.R.C.S. (Lond.), 43. Rhondda Street, Swansea. (Corporal, R.E.)
- 1919 Hopkinson, George Green, 317, Killinghall Road, Bradford, Yorks.
- 1918 Hora, Frederick Rudolph Hay, B.Sc. (Lond.), Saxonholme, 87, Pepys Road, New Cross, London, S.E. 14.
- 1919 Hornby, Arthur John Ward, B.Sc. (Birm.), No. 5, G. H.Q. Chemistry School, B.E.F., France. (Lieut., R.G.A.)
- 1919 Horner, Thomas, M.Sc. Tech. (Manc.), 9, Elm Bank, Humphrey Street, Crumpsall, Manchester.
- 1906 Horsman, Frederick Henry Godfrey, B.Sc. (Lond.), 18, Burney Street, Greenwich, London, S.E. 10.

- 1917 Hothersall, William Christian, M.Sc.Tech. (Manc.). Research Department, Royal Arsenal, Woolwich, London. S.F. 18. (Royal Fusiliers.)
- 1917 Housley, Harold. M.Sc. (Manc.). Assam Place, Cartwright Street, Hooley Hill, nr. Manchester.
- 1918 Howell, Owen Rhys, B.Sc. (Wales), 12, St. John's Road, Clydach, S.O., Glam. (Lieut. and Q.-M., London Regt.; mentioned in despatches.)
- 1918 Howells, Oliver Richard, M.Sc. (Lond.), County Secondary School, Ruskin Road, Crewe. (London Regt.)
- 1918 Howie, Matthew, co Carrie, 10, Marchmont Street, Edinburgh.
- 1917 Howlett, Leslie Horace, B.Sc., A.R.C.S. (Lond.).
- 1917 Hudleston, Lawson John, B.Sc. (Lond.). 68, Parliament Hill, Hampstead, London, N.W. 3. (Captain; M.C.)
- 1919 Hudson, Frank, B.Sc. (Vict.), 49, Gordon Road, Monton Green. Manchester.
- 1918 Hughes, Edwin Burnhope, 11, Alderbrook Road, Nightingale Lene, Clapham Common, London, S.W. 12.
- 1918 Hughes, Ellis, B.Sc. (Wales). 14, Myddleton Street, Carlisle.
- 1919 Hughes, John Owen, B.Sc. (Wales), Satara Vada, Albany Road, Fleet, Hants.
- 1918 Hughes, Robert John, B.Sc. (Wales), The Grammav School, Manchester.
- 1948 Hume, John, B.Sc. (Edin.), 8. Wardie Crescent, Edinburgh. (Captain, R.E.)
- 1919 Humphreys, Thomas Clement, 76, Gibbins Road, Solly Oak, Eirmingham.
- 1917 Hunter, Sydney Faulkner, 21, Bedford Street, Liverpool.
- 1919 Hunwicke, Roderick Francis, B.Sc. (Lond.), Harst Cettage, Hadley Common, Barnet, Herts. (2nd Lieut., R.A.S.C.)
- 1918 Hussey, Arthur Vivian, O.B.E., A.C.G.I., The British Cellulose and Chemical Manufacturing Co., Ltd., Spondon, Derby, (Captain, R.E.; Order of St. Stanislas and Croix de Guerre.)
- 1918 Hutchison, Charles Graham, B.Sc. (Lond.), 26, Wightman Road, Harringay, London, N. 4.
- 1918 Hyde, Alfred William Tovey, Wythburn, Streetly Lane, Four Oaks, Warwickshire,
- 1919 Hyland, James, Chapeltown, Pudsey, Yorks. (R.E.)
- 1909 Hyslop, Neil McNinch, 4, Ronaldshaw Park, Ayr. Scotland.

- 1918 Ingham, Frank Tinley, B.Sc. (Lond.). Middle Rasen, Market Rasen. Lines. (Lieut., Lines. Regt.)
- 1917 Ingham, John William, B.Sc. (Lond.), c/o Grieve, 16. East Mayrield, Edinburgh.

## ASSOCIATES.

- 1918 Inglis, Gavin, B.Sc. (Loud.), 82. Great Brook Street, Birmingham.
- 1918 Inman, Wallace Mills, M.Sc. (Liv.), 5, Hardshaw Street, St. Helens, Lancs. (Captain, R.E.)
- 1917 Islip, Harold Thomas, Stilton, St. Mark's Road, Maidenhead. (Cadet, R.G.A.)

## J

- 1919 Jackson, Colin Gyrth, M.Sc. (Leeds), 13, Wemyss Road, Blackheath, London, S.E. 3.
- 1917 Jackson, Frederick William, A.C.G.I., B.Sc. (Lond.), 1, Hill Grove Crescent, Kidderminster.
- 1918 Jackson, Joseph Stanley, B.Sc. (Dun.), 11. Fairfield Road. Derby.
- 1918 Jakeman, Alfred Thomas, B.A. (Oxon.), 8, Warneford Road, Oxford.
- 1918 James, Talfryn. 127, Woodfield Street, Morriston, Glam. (Captain, General List of Officers.)
- 1912 Jarrard, William John, B.Sc. (Lond.), A.R.C.S., The University, Sheffield. (Captain, Commandant G.H.Q. Chemistry School).
- 1918 Jary, William Frederick, B.A. (Cantab.), 35, South Road, Smethwick, Staffs.
- 1919 Jay, Arthur Howard, 112, Church Street, Bloxwich, Staffs.
- 1918 Jefferis, Arthur Tarlton, B.Sc. (Adelaide).
- 1919 Jeffers, Ernest Haynes, 87, Kyrle Road, West Side, Clapham Common, London, S.W. 11.
- 1919 Jefferson, Robert Ernest, M.Sc. (Manc.), 70. Linwood Road, Handsworth. Birmingham.
- 1919 Jeffery, John Hugh, co New Pegamoid Ltd., Marshside Works, Lower Edmonton, London, N.
- 1917 Jenkin, Charles Oswald Frewen, B.A. (Cantab.), H.M. Factory, Sandycroft, Chester. (2nd Lieut., Suffolk Regt.)
- 1918 Jenkins, John Barelay, M.A., B.Sc. (Edin.), Lea Park, Perth Road, Blairgowrie.
- 1919 Jennison, Hubert. A.M.C.T., S. Selbourne Villas, Manningham, Bradford. (Lieut.)
- 1919 Jennison, Richard, A.M.C.T., Hawthorne Bank, Longsight, Manchester, (Lieut., R.A.F.)
- 1917 Jensen, Harold Rupert, M.Sc. (Liv.), 5. Coniston Avenue, Wallasey.
- 1917 Jephcott, Harry, B.Sc. (Lond., 121, Cambridge Gardens, London, W. 10.
- 1918 Jepson, Clarence, B.Sc. Manc., Manchester Corporation Sewage Works, Davyhulme, near Manchester.
- 1911 Jewell, William, 8, Tower Road, Dartford, Kent.
- 1917 Jewell, William Raiph, B.Sc. Medburne, Noble Street, Geelong, Victoria, Australia.

- 1918 Jinkings, Arthur John, B.Sc. (Lond.), 15, Church Road. Lower Bebington, Cheshire.
- 1918 Jobling, Edgar, B.Sc., A.R.C.S. (Lond.), 373. Spring Bank West, Hull. (Captain, R.E.; M.C.)
- 1918 Johnson, Harry Tyrer, M.Sc. Liv.), Graesser Villa. Russell Street. Cefn, Ruabon, N. Wales.
- 1917 Johnson, John Carroll, A.C.G.I., 101, Carpenters Road, Stratford, London, E. 15. (Lieut. R.A.O.C.)
- 1918 Johnson, John Richard, "Casita." Glencairn Road, Streatham, London, S.W. 16.
- 1919 Johnson, Joseph Robert, The Croft, Langleys Road, Selly Oak, Birmingham,
- 1918 Johnson, Miss Mary, Newnham College, Cambridge.
- 1917 Johnson, William, M.Sc. (Leeds), Walton. Stoneygate Avenue, Leicester.
- 1918 Johnson, William Prescott, B.Sc. (Manc.), 28. High Street. Wallheath, nr. Dudley.
- 1918 Johnstone, Sydney James, B.Sc. (Lond.), Rousdon, Clifford Road, New Barnet, Herts.
- 1915 Jones, Alfred Owen, Laleham Lodge, High Welwyn, Welwyn, Herts.
- 1919 Jones, Archibald Orton, B.A. (Oxon.), 14, Claremont Road. Cape Hill, Smethwick, Staffs.
- 1890 Jones, Barton W., Hooton Hall Gardens, Chester.
- 1912 Jones, Edward Oswold, B.Sc., A.R.C.S. (Lond.), A.R.S.M., 15. Trentham Avenue, Dewsbury Road, Leeds. (Lieut., R.E.)
- 1919 Jones, George Bishop, A.M.I.C.E., 2. Reinwood Road, Lindley, Huddersfield.
- 1917 Jones, George Joseph, Aldine House, Bedwell Road, Belvedere. Kent. (Lieut., South Wales Borderers.)
- 1919 Jones. Henry Humphreys, 13. Berkley Street, Liverpool.
- 1919 Jones, Herbert John. A.M.S.T., S1, Ham Park Road, Stratford, London, E. 15,
- 1917 Jones, James Ivor Morgan. B.Sc. (Wales), 17, Hart Street, Carlisle.
- 1918 Jones, John Edward, B.Sc. (Wales), Elmira, Victoria Avenue, Borrowash, near Derby.
- 1919 Jones, Leslie Amiel, 16, Livingstone Road, Handsworth, Birmingham. (Lieut, R.E.)
- 1918 Jones. Osman, Quemerford, Calne, Wilts.
- 1917 Jones, Richard Owen, B.Sc. (Wales), 9, Park Hill, Clapham, London, S.W. 4.
- 1018 Jones, Robert Henry, M.Sc. (Manc.), Thornville, Fulwood Hall Lane, Preston.
- 1918 Jones, Thomas Gilbert Henry. B.Sc. (Sydney), P 14 West, Gretna. Scotland.
- 1913 Jones, Tom Standard, B.Sc. (Lond.), 44. Whiteley Road, Upper Norwood, London, S.E. 19.

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- 1919 Jones, William Owen, B.Sc. (Wales), 4, Adolphus Road, Finsbury Park, London, N. 4.
- 1917 Joyner, Reginald Arthur, B.Sc (Lond.), M.Sc. (Bris.), 33, South Beach Avenue, Ardrossan, Ayrshire. (Captain, R.S.F.)
- 1917 Judd. Clifford William. B.Sc. (Wales), Maythorne, Ardrossan Road, Saltcoats, Ayrshire.
- 1918 Judd. Miss Hilda Mary, B.Sc., A.R.C.S. (Lond.), D.I.C., 34, Barrowgate Road, Chiswick, London, W. 4.

## K

- 1918 Kay. Herbert Davenport, B.Sc. (Vict.), 85, Grenville Street, Stockport, (Major, Chemical Adviser; mentioned in despatches.)
- 1918 Kay, William Marriott, M.Sc. (Liv.). 15. Hampstead Road, Elm Park, Liverpool.
- 1919 Kennedy, Miss Elizabeth Gentle, B.Sc. (Glas.), 11, Carlyle Square, Chelsea, London, S.W. 3.
- 1918 Kenyon, James, B.Sc. (Vict.). 270. Denton's Green Lane, St. Helens. Lanes.
- 1917 Kerr, Peter, B.Sc., M.A. (Edin.), 77. West Park, Eltham, London, S.E. 9.
- 1903 Keys, William Harold, 1168, London Road, Alvaston, Derby.
- 1917 King, Charles Arthur, M.Sc. (Leeds). Norton House, Greenside. Worley, Leeds.
- 1918 King, Herbert Walter, A.R.C.S. (Lond.), 7, Coleridge Walk, Golders Green, London, N.W. 4.
- 1917 King, John, 51, Lady Bay Road, West Bridgford, Notts. Captain. Lincolnshire Regt.; mentioned in despatches.)
- 1917 King, William Evans, A.R.C.S., 24, Tantallon Road, Balham, London, S.W. 12.
- 1905 Kingdon, Harry Horace, M.A. (Oxon.), The Cot, Empress Avenue, Woodford Green, Essex.
- 1913 Kingscott, Percy Charles Roberts, A.R.C.S., B.Sc. (Lond.), 70, Bede Burn Road, Jarrow-on-Tyne.
- 1918 Kingsley, Harry, B.Sc.Tech. (Manc.), 165, Cheetham Hill Road. Manchester.
- 1918 Kipping, Stanley Percival, Chalcots, 41. Roxborough Park. Harrow-n-the-Hill. (Cadet, R.G.A.)
- 1918 Kirby, George Gerald, M.Sc. (Liv.), 36, Hampstead Road, Elm Park, Liverpool. (2nd Lieut., R.A.F.)
- 1918 Kirkland, Rev. Thomas James, B.Sc. (Lond., A.K.C., King's Schol. Ely, Cambs.
- 1918 Kirkwood, Thomas Williamson, B.Sc. (Dun.), 421, Scotswood Road. Newcastle-on-Tyne.
- 1919 Knaggs, John, B.Sc. (Lond.), A.R.C.S., South Street, Bridlington, Yerks. (Lieut., R. E.)
- 1919 Knapp, Lionel Frederick, B.Sc. (Lond.), Hertcombe, Kingston Hill. Surrey. (O.C.B.)

### ASSOCIATES.

- 1918 Knibbs, Norman Victor Sydney, B.Sc. (Melbourne), H.M. Factory, Langwith, near Mansfield, Derbyshire.
- 1918 Knox, Archibald, c o Chemical and Metallurgical Corporation, Ltd., 248. High Street, Harlesden, London, N.W. 10.

## 1

- 1918 Lacell, Maurice Noel, B.Sc. (Lond.), 17, Finchley Way, Finchley, London, N. 3.
- 1918 Lacy, Sidney Augustus de, 1, Dordrecht Road, Acton, London, W. 3.
- 1918 Lamble, Alfred, M.Sc. (Liv.), 28, Venmore Street, Liverpool.
- 1919 Lancaster, Miss Jane, A.R.C.S., 1. Amalinda Villas. Burlington Lane. Chiswick, London, W. 4.
- 1919 Lane. Francis Henry Newey, B.Sc. (Lond.), Queensberry, 2, Dover Street, Coventry.
- 1917 Lane. Kenneth Westmacott, B.A. (Oxon.). Beaudesert Rectory, Henley-in-Arden, Birmingham. (Lieut., R.F.A.)
- 1918 Langton, Harold McKee, B.A. (Cantab.), B.Sc. (Lond.), 23, Crawley Road, Westcliff, Southend-on-Sea.
- 1919 Lapworth, Morvan, B.Sc. (Lond.), A.R.C.S., 44, Wilton Crescent, Wimbledon, London, S.W. 19. (Lance-Corporal, Rifle Brigade.)
- 1918 Laughton, Edmund Mainwaring, B.A. (Cape of Good Hope), P.O. Box. 201, Durban, Natal, S. Africa. (Trooper, S. African Mounted Rifles.)
- 1910 Laughton, Francis Eugene, Foyers, Scotland. (Lieut.-Colonel Queen's Own Cameron Highlanders; M.C.)
- 1919 Lawson, Wilfrid, B.Sc. (Liv.), 15. Barrington Road, Sefton Park. Liverpool.
- 1918 Laxton, Frank Charles, B.Sc. (Lond.), High Street, Ely, Cambridgeshire. (Sub-Lieut, R.N.V.R.)
- 1918 Lay, Douglas, A.R.S.M., Aston Hall, Hawarden, near Chester.
- 1917 Lea. Henry Turner, M.Sc. (Birm.), Edgeote. Ashby Road, Burton-on-Trent. (Staff-Lieut., Chemical Adviser.)
- 1919 Leaper, Clement J., Nun's Island, Galway.
- 1918 Le Brocq, Laurence Francis, B.Sc. (Lond.), Akender, Guildford Road, South Farnborough, Hants. (Lance-Corporal, London Regt.)
- 1919 Lee. Walter Evelyn, B.A. (Cantab), "Beechmoor," Shipley Glen, Shipley, Yorks. (R.E.)
- 1919 Lee, William Bell, B.Sc. (Lond.), 2, St. John's Road, Knutsford, Cheshire.
- 1918 Lefebare, Victor, B.Sc. (Lond.), Hotel Lapérouse, Rue Lapérouse, Paris 16°, France. (Major, R.E.)
- 1919 Leicester, Thomas Billington, B.Sc. (Manc.). Woodland Avenue, Wolstanton, Stoke-on-Trent.
- 1918 Leigh, Alfred John, B.Sc. (Lond.), A.R.C.S., Duff House, Banff.

- 1918 Leigh, Walter Norman, M.Sc.Tech. (Manc.), 140, Northgate Road, Stockport, Cheshire.
- 1906 Le R ssignal, Rabert, B.Sc. (Lond.), 2. Caesarea Place. St. Saviour's Road, Jersey.
- 1918 Leslie, Miss May Sybil, D.Sc. Leeds I, Park View Terrace, Halton, Leeds.
- 1918 Lever, David, A.R.T.C., Plantation Diagrand, East Bank, Demerara, (Corporal, R.E.,)
- 1918 Levingston, Hugh George, A.R.C.S.I., Sunnyside, 27, Oakley Read, Ranelagh, Dublin. (2nd Lieut., R.A.S.C.)
- 1919 Levy. Frank, 13, Fairfield Road, Tollor Laue, Bradford, (Sergeant, R.E.)
- 1919 Levy, Joseph Frederick, 111, Wilberforce Road, Finsbury Park, London, N. 4.
- 1918 Lewe ek. William, B.Sc. (Lond.), 25, Hall-hall Crescent, Wanstead, Essex.
- 1919 Lewis, Bertram Arthur, B.Sc. (Livit, Clovelly, Arondale Road, Hoylake, Cheshire, (Sergeant Dispenser, R.A.M.C.)
- 1918 Lewis, Edgar, Ivy House, Ynystawe, Clydach, Swansea.
- 1918 Lewis, Francis Charles, B.Sc. (Wales), 1965, Gladstone Read, Barry, Glam. (Flight Cadet, R.A.F.)
- 1919 Lewis Miss Iva Gwendoline, B.A. (T.C D.), 24, Emerson Read, Hford, Essex.
- 1918 Lewis, John Stanley, B.Sc. (Wales), Pembroke House, Ferryside, S. Wales, (2nd Lieut., South Wales Borderers.)
- 1917 Lewis, Robert Illtyd, B.Sc. (Wales), co The Burnish Oil Co., Ltd., Rangoon, Burmah.
- 1919 Lineham, Oswald Reginald, B.Sc. (Lond). Douglas Cottage. Shere Read. Stevenston, Ayrshire.
- 1919 Linton, Thomas Frederick, A.M.S.T. 26, Secureta Road, Cheadle Hulme, nr. Stockport.
- 1917 Linzell, Leslie, Central Research Instituti n. A.V.S., Thornhill, Aldershot. (Lieut., A.V.C.)
- 1918 Littlejohn, Malcolm, M.A., B.Sc. (Glas.), Easter Hallhill House, Baillieston, Lanarkshire.
- 1919 Littler, Robert Pearson, A.M.S.T., Elle-mere, 504, Kensington Hill Brislington, Bristol.
- 1918 Lizius, John Leonard, Hon. B.Sc. (Lond ). 2a, King's Cress Road, London, W.C. I. (Lieut., R.E.)
- 1918 Llewellyn, Benjamin, M.Sc. (Manc.), 11, St. Silas Street, Ardwick, Manchester, (Lieut., R.A.O.C.)
- 1917 Lloyd, John Lewis, B.Sc. (Wales), Aeron View, Felinfach, S.O., Cardiganshire.
- 1919 Lloyd, Joseph, A.M.C.T., 46, Station Road, N. Reddish, Stockport.
- 1917 Lloyd, William Ellis, B.Sc. (Wales), Plas Meredydd, Cyffylliog, Ruthin, N. Wales.

### ASSOCIATES.

- 1918 Laring, Willie Camble, B.Sc. A.R.C.S., D.I.C. (Lond.), 22, Prospect Park, Exeter. (Lieut., R.E.)
- 1917 Lodge, George, A.R.C.S.L. c'o Messrs, Levinstein, Ltd., Blackley, Manchester.
- 1917 Lomax, Ernest Lawson, B.Sc. (Vict.), co Hall Motor Fuel, Ltd., Pinner's Hall, Austin Friars, London, E.C. 2.
- 1919 Long, Bertram Raymond, B.A. (Dub.), 6, Park Villas, Stillorgan Park, Dublin. (Lieut.)
- 1919 Long, Henry Lawrence, B.Sc. (Lond.). 19, Seward Road, Hanwell, London, W. 7.
- 1918 Lorains, John Page, B.Sc. (Dun.), Prospect Villa, Whitby, Yorkshire. (Lieut., R.E.; M.C.)
- 1918 Lorenz, Hans Hugo Herbert, M.A. (Cantab.). Fairfield, Brockley Park, Forest Hill, London, S.E. 23.
- 1918 Lowe, Austin, A.M.S.T., c/o Mrs. Henwood, St. Ann's Chapel, Albaston, Gunnislade, nr. Tavistock.
- 1919 Lowe, Harold Newton, B.Sc. (Birm.), Barrister-at-Law, Southbourne, Sheffield. (Captain.)
- 1918 Lund, William Jackson, M.Sc.Tech. (Manc.), 91, Mitchell Street, Rochdale, Lancs.
- 1917 Lundholm, Gösta, Dynamite Factory, Modderfontein, Transvaal, S. Africa.
- 1918 Lundholm, Nils Olof. Bryn Glas, 53, Queen Victoria Road, Llanelly, S. Wales.
- 1918 Lynn, Norman. 56, Richmond Mount, Headingley, Leeds.

## M

- 1918 MacCulloch, Andrew Francis, M.A., B.Sc. (Edin.), Government Medical Stores, Madras, India. (Lieut., R.F.A.)
- 1918 Macdonald, John Hendry, M.A., B.Sc. (Aberd.), 182, Plumstead Common Road, London, S.E. 18.
- 1916 Macintyre, Ernest Gunn, B.Sc. (Glas.), 221. Langside Road, Glasgow (Lieut., R.A.F.; Officier de l'Ordre du Nichian Iftakar.)
- 1918 MacIntyre, Kenneth, A.R.C.S., 34, Whitehall Road, Harrow-on-the-Hill.
- 1919 MacKechnie, Robert Drysdale, c'o The Clydesdale Bank, Ltd., 30, Lombard Street, London, E.C. 3.
- 1919 MacKenzie, David, The Midland Vinegar Co., Ltd.. Aston Cross. Birmingham.
- 1917 Mackerill, John. M.Sc (Manc.), 138. Greenway Road, Runcorn, Cheshire.
- 1918 Maclean, Alexander, A.R.T.C., 44, Gladstone Road, Saltcoats, Ayrshire. (Corporal, R.E.)
- 1917 MacLeod, Joseph. 18, Alderney Street, Pimlico. London, S.W. 1.
- 1916 Madden, Denis, A.R.C.S.I., 40, Wellington Road, St. Luke's, Cork, Ireland.

- 1919 Major, Frederick, B.Sc. (Lond.), Victis, 8, Edgar Road, Sanderstead, Surrey.
- 1918 Mandleberg, Joseph Harold, M.A. (Cantab.). Redelyffe, Victoria Park, Manchester. (2nd Lieut.)
- 1915 Manley, Cyril Hubert, M.A. (Oxon.). 17, Booth Avenue, Withington. Manchester.
- 1918 Mann, Sydney Andrew, B.Sc. (Lond.), 27. Lansdowne Road, South Woodford, Essex. (Captain, R.A.M.C.)
- 1919 Mann, William, B.Sc. (Lond.). 84, Inchmery Road, Catford, London, S.E. 6.
- 1917 Mardles, Ernest Walter John. B.Sc. (Lond.). 24, R.F.C. Villas, Lynchford Road, S. Farnborough, Hants.
- 1917 Marks, Henry Percy, B.Sc. (Lond.), 3, Cranley Mansions, Muswell Hill, London, N. 10. (Seaman, R.N.)
- 1918 Marks, Lewis, A.C.G.I., A.I.M.M., P.O. Box 10s, Germiston, Transvaal, S. Africa. (2nd Lieut., R.E.)
- 1918 Marples, Morris Edgar, M.Sc. (Liv.), No. 3 Main Supply Depôt, Leeds. (Major, R.A.S.C.)
- 1918 Marrack, Miss Muriel Tregarthen, B.Sc. (Lond.). 16, Clanricarde Gardens, Hyde Park, London, W. 2.
- 1918 Marsden, Arthur, Hazelmere, Belvoir Road, St. Andrew's Park, Bristol.
- 1919 Marsh, William Alfred, B.Sc. (Leeds). Cedar House, Hasland, Chester-field. (Lieut., West Yorks Regt., attd. R.E.)
- 1905 Martin, Edgar Charles, B.Sc. (Lond.), 3. Derby Villas, Derby Road, S. Woodford, London, E. 18. (2nd Lieut., R.E.)
- 1919 Martin, William Francis, 18, Moat Place, Edinburgh.
- 1919 Mason, Miss Helen, B.Sc. (Edin.), Elmbank, Stow, Midlothian.
- 1918 Mason, John Ernest, B.Sc. (Lond.), 3, Woodpath, Southsea, Hants.
- 1917 Masson, James Irvine Orme, M.B.E., D.Sc. (Melbourne). Research Department, Royal Arsenal, Woolwich, London, S.E. 18.
- 1914 Mather, Ewart, B.Sc. (Lond.), Ruabon Chemical Works, Ruabon.
- 1919 Mather, Wilfred, Jessamine Cottage, Audenshaw, nr. Manchester.
- 1918 Mathews, Frank, B.Sc. (Lond.), 12. Hurlingham Court Mansions, London, S.W. 6.
- 1918 Matthews, George Leslie, B.Sc. (Lond.), 44, Princes Read, Teddington, Middlesex. (Captain, O/C Sanitary Section, R.A.M.C.; M.C.; mentioned in dispatches.)
- 1917 McArthur, Donald Neil, B.Sc. (Glas.), 28, Grafton Street, Glasgow.
- 1917 McCall, Robert, M.A., B.Sc. (Edin.), 23, Bellevue Crescent, Ayr. Scotland. (Corporal, R.E.)
- 1918 McCallum, Louis Francis, Government Analytical Laboratary, Cairo, Egypt.
- 1919 McClelland, Ernest Wilson, B.Sc. (Q.U.B), 79, Kansas Avenue, Antrim Road, Belfast.

- 1918 McCraith, John Stuart, M.Sc.Tech. (Manc.), 39. Brook Street, Chorlton-on-Medlock, Manchester.
- 1918 McCulloch, Andrew, 143, Mottram Road, Stalybridge, Cheshire. (R.A.M. C.)
- 1916 McEwan, Thomas Lawson, B.Sc. (St. Andrews), 47, Upper Wickham Lane, Welling, Kent.
- 1918 McFadden, Alexander, B.Sc. (Glas.), 5, Apley Road, Doncaster. (Cadet, R.G.A.)
- 1918 McFarlane, Archibald, M.Sc. (Leeds), 46, Dunraven Road, W. Kirkby, Cheshire.
- 1917 McHutchison, William. B.Sc. (Glas.), 108, City Road, Edgbaston, Birmingham.
- 1917 McInroy, John Naylor, M.A., B.Sc. (St. Andrews), Glentilt, Barrie Terrace, South Beach, Ardrossan.
- 1918 McIntyre, Robert, A.R.C.S., 36, Kenilworth Park, Rathgar, Dublin.
- 1919 McIver, Miss Constance Mary, B.Sc. (Lond.), 44, Lebanon Gardens, Wandsworth, London, S.W. 18.
- 1918 McKerrow, John Armour, M.A., B.Sc. (Glas.), 2, Keymer Villas, Kidwelly, Carm.
- 1918 McKie, Miss Phyllis Violet, M.Sc. (Wales). Castle Bank, Bangor, N. Wales.
- 1918 McKillop, George Francis, Dunglas, Broxburn, West Lothian.
- 1918 McKnight, James Robert, M.A., LL.B. (Cantab.), B.Sc. (Lond.), Barrister-at-Law, 21, Barras Lane, Coventry.
- 1917 McLachlan. Thomas, A.C.G.I., 23. Clarendon Road. Lewisham, London, S.E. 13. (Corporal, R.E.; D.C.M.)
- 1918 McLaren, Alexander Williamson, Ramsden Dock, Barrow-in-Furness.
- 1919 McLaren, Miss Mary Campbell, M.A., B.Sc. (Glas.). 30. Millbrae Crescent, Langside, Glasgow.
- 1918 McLean, Wilfrid, B.A., B.Sc. (N.U.I.), A.R.C.S.I., H.M. Factory, Queensferry, Chester.
- 1918 McQueen, James, junn. Clyde House, near Uddingston. Lanarkshire. (R.E.)
- 1919 McQuillen. William Thomson, B.A. (Cantab), M.Sc. (Dun.), 211, Chesterfield Road. Sheftield. (Captain, Northumberland Fusiliers.)
- 1919 Medofski, Samuel, B.Sc. Tech., M.Sc. (Manc.), 249, Cheetham Hill Road. Manchester. (2nd Lieut., R.A.F.)
- 1919 Mellon, Douglas, A.R.C.S.I., Elm Lawn, Serpentine Avenue, Dublin.
- 1918 Mellor, Benjamin Stanley, M.Sc. (Vict.), Clooncarney, St. Meddan's Street, Troon, Ayrshire.
- 1917 Menzies, Robert Charles, B.Sc. (St. Andrews), Hollycroft, Uplands, Loughton, Essex.
- 1917 Merheim, Germain, A.R.C.S., 54, Lansdowne Road, Crumpsall, Manchester. (Quarter-Master Sergeant, R.E.)

# Date of Admission ASSOCIATES.

- 1919 Mersan, Ferdinand de, Fairfield, Chestnut Avenue, Boston Spa, Yorks.
- 1918 Messenger, Walter George, B.Sc. (Birm.), 107, Tindall Street, Balsall Heath, Birmingham, (R.E.)
- 1918 Meston, William, M.A., B.Sc. (Aberd.), R semount. Peterculter. Aberdeenshire.
- 1918 Meyrick, Thidal Francis, B.Sc. (Lond.), 39, Manselt on Road, Manselton, Swansea.
- 1917 Middleton, Arthur Beresford, A.R.S.M., A.M.S.T., 24. The Ridge, Eastriggs, Drumfriesshire.
- 1918 Middleton, Herbert, M.Sc. (Manc.), 12. Park Avenue, Bradford, Yorks. (Chief Petty Officer, R.N.A.S.)
- 1917 Midgley, James, M.Sc. Leeds, 6, Claremont Road, Morecambe, Lancs.
- 1917 Miles, Frank Douglas, A.R.C.S., M.Sc. (Lond.), Messr-Burt, Boulton & Haywood, Ltd., Silvertown, London, E. 16.
- 1918 Miles, William Herbert, 15, Ormiston Road, New Brighton, Cheshire,
- 1918 Miller, Eric Julius, Whinmere, Riddings Road, Ilkley, Yorks,
- 1889 Miller, James Bruce, Sandilands Chemical Works, Aberdeen. (Captain, R.E.; M.C.)
- 1919 Milligan, Arthur George, B Sc. (Q.U.I.), Eastnot Somerton Road, Belfast,
- 1917 Mills, Laurence Harry, B.Sc. (Birm.). Pennaut H use, Rowley Regis, Birmingham.
- 1917 Mills, Leonard, B.Sc.Tech. (Manc.), Pennant House, Rowley Regis, Birmingham.
- 1917 Milne, William Stephen, B.Sc. (Lond.), 43. Que n's Roal, Aberdeen.
- 1918 Miskin, Frederick Fenby, 9, Grove Place, Penarth, Glam.
- 1919 Mitchell, Miss Isabel, B.Sc., M.B., Ch.B., Edin.). 56. Kyle Park, Uddingston, nr. Glasgow.
- 1919 Mitchell. Alec Duncan. B.Sc. (Lond.). 52. Montalt Road, Woodford Green, Essex. (Captain.)
- 1917 Monteith, William, B.Sc. (Glas.), Messrs. Note: Explosives Co., Ltd., Ardeer, Stevenston, Ayrshire. (Corporal R.E.)
- 1917 Moore, Arthur, B.Sc. (Manc.), Technical School, Swindon, Wilts.
- 1918 Moore, Burrows, M.Sc. Tech. (Manc., B.Sc., Eng., & L. nd., A.K.C., Department of Chemistry, College of Technology, Sackville Street, Manchester.
- 1918 Moore, Edward William James, B.S.: (Land.), 62, High Cross Road, Tottenham, London, N. 17. (Sergeant, R.A.M.C.)
- 1917 Moore, Harold. M.Sc.Tech. (Manc.), 7. Poplar Grove, Hazel Grove, Stockport.
- 1918 Moore, Robert Alfred, B.Sc. (Dun.), The College 4 Ageleulture, 13, George Square, Edinburgh.
- 1918 Moore, Robert Charles, M.A., M.Sc. (Liv.), 25, Galloway Road, Waterloo. Liverpool.

## ASSOCIATES.

- 1918 Moore, Themas William, M.A., B.Sc. (Edin.), Reba Villa, Rowlands Gill, Co. Durham.
- 1918 Morgan, Benjamin Stanley, B.Sc. (Wales), 22, Craven Road, Rugby.
- 1917 Morgan, Evan Dulais, B.Sc. (Wales), Yniswen, Crynant, nr. Neath.
- 1919 Morgan, Idwal, B.Sc. (Wales,, 14, Myddleton Street, Carlisle,
- 1917 Morgan, John Richard, B.Sc. (Wales), 84, Chichele Road, Cricklewood, London, N.W. 2.
- 1918 Morley, Frank Isaac, Ph.D. (Heid.), B.Sc. (Lond.), 30, New North Road, Huddersfield.
- 1918 Morris, Alfred. M.Sc. (Manc.), 51. Corder Road. Ipswich. (Lieut., R.A.O.C.)
- 1919 Morris, Edgar Ford, M.A. (Oxon.), Holly Bank. Roby, near Liverpool.
- 1918 Morris, Ivor Prys. B.Sc. (Wales), 76. Ridgmount Gardens, London, W.C. I. (Captain, R.E.)
- 1918 Morris, Joseph. M.A. (Oxon.) Adlam, Cliff Road, Wallasey, Cheshire.
- 1918 Morrison, James Alexander Shepherd, M.Sc. (Leeds), The Limes, Frodsham, Cheshire.
- 1919 Morrison, Norman, B.Sc. (Lond.), San Remo, Wavertree, Liverpool. (Lieut., R.E.)
- 1919 Morton, Mathew, B.Sc. (Glas.), 134, Corkerhill, Cardonald, Glasgow.
- 1918 Moses, Abram. B.Sc. (Leeds), 117, Peabody Road. South Farnborough, Hants.
- 1918 Moudgill, Kishori Lal., B.Sc. (Glas., Christ's College, Cambridge.
- 1918 Muirhead, William, Bracadale Terrace, Woodhead Avenue, Kirkintilloch, Scotland.
- 1917 Munre, Arthur Macdonald, M.A. (Oxon.), co Bank of Australasia, Collins Street, Melbourne, Victoria, Australia.
- 1918 Munro, Leslie Alexander, B.A. (Oxon.), The Bungalow, Wincham, Cheshire.
- 1910 Munro, William Tom, 29, Else Road, Rugby.
- 1919 Murdoch, Alexander, A.R.T.C. (Glas.). Garden Suburb, Westerton, Dumbartonshire.
- 1919 Murdech, Barclay Brown, M.A., B.Sc. (Lond.), 5, Carlton Street, Edinburgh. (Captain & Adjutant, attd. R.E.)
- 1918 Mussell, Albert George, 111. Mitcham Road, East Ham, London. E. 6.
- 1917 Myers, James Eckersley, D.Sc. (Manc.), The Chemical Department, The University, Manchester.
- 1918 Myhill, Alphonse Renfred, 1. Daniels Road, Little Bromwich, Birmingham.

## N

- 1919 Naish, William Archibald, A.R.S.M., A.I.M.M., 24, University Mansions, Putney, London, S.W. 15.
- 1917 Napier, Oswaid James Walter, M.A. (Cantab.). Somerford Park, Congleton, Chesire. (Lieut., R.A.F.)
- 1919 Nash, Albert, Holly House, Wath-on-Dearne.

## ASSOCIATES.

- 1919 Nash, William Adrian Thomas, A.R.C.S., 1, St. Barnabas Villas, Guildford Road, London, S.W. 8. (Lieut., R.E.)
- 1919 Neech, Herbert Richard, Hetland Cottage, Ruthwell, Dumfrieshire,
- 1918 Needs, Francis Edwin, 1, Claremont Road, Bishopston, Bristol, (Lieut., R.F.A.)
- 1918 Neilson, John Francis, B.Sc. (Queensland). (Sergeant, A.I.F.)
- 1902 Neumann, Edgar David Maurice, M.A. (Oxon.), Ph.D. (Göttingen), Chemical Supply Co., Old Barking Gas Works, Abbey Road. Barking, London, E. 15.
- 1918 Newbery, George, B.Sc. (Lond.), A.R.C.S., D.I.C., Instow, Westbury Road, New Malden, Surrey. (Lieut., R.E.)
- 1919 Newell, Edwin Frank, A.R.S.M., The Quasi-Arc Co., The Works, Copperfield Road, London, E. 3. (R.E.)
- 1919 Newlands, Geerge, M.A., B.Sc. (Aberd), 88, Sycamore Road, Smethwick, Staffs.
- 1918 Newman, Sidney Herbert, B.Sc. (Lond.), 1, Rochester Avenue, Sedgley Park, Prestwich, Manchester.
- 1912 Newman, William Alfred Cyril, B.Sc., A.R.C.S. (Lond.), A.R.S.M., Royal Mint, London, E. 1.
- 1918 Newton, Arthur Ulysses, B.Sc. (Lond.), Royal Aircraft Establishment, Farnborough, Hants. (Lieut., Border Regt.)
- 1918 Nicholas, Sydney Diggary, H.M. Factory, Sutton Oak, St. Helens.
- 1919 Nicholls, Noel Albert, B.Sc. (Birm.), The Osborne, Irvine, Ayrshire
- 1919 Niven, Charles David, M.A., B.Sc. (Aberd.), 6. Chanonry, Old Aberdeen, Scotland.
- 1918 Nobbs, Howard, M.Sc. (Lond.), Inglewood, Claremont Grove, Woodford Green, Essex. (Captain, Northamptonshire Regt.)
- 1911 Nodder, William Henry, B.Sc. (Lond.), 2, Stafford Road, Brighton.
- 1919 Norman, David John, 103, Howbury Street, Bedford, (2nd Lieut., R.G.A.)
- 1919 Norris, Mrs. Dorothy, M.Sc. (Manc.), Central Research Institute, Kasauli, Punjab, India.
- 1918 Northing, Herbert Cecil, A.R.C.S.I., 2. Little Moor Hill, Smethwick, Birmingham. (Seaman, R.N.V.R.)
- 1917 Northover, Roland, East View, Stanhope Road, Highgate, London. N. 6. (Captain, Lancashire Fusiliers.)
- 1908 Norton, Harold Richard, B.Sc. (Lond.), M.Sc. (Birm.), 116. Trinity Road, Handsworth, Birmingham. (Corporal, R.E.)
- 1918 Nurse, Edwin Hart, B.Sc. (Lond.), Southwold, Lewis Road, Sutton, Surrey. (Lieut., R.A.F.)

## 0

- 1917 Oakley, Percy Dale, B.Sc. (Lond.), 84, Alexandra Park Road, Muswell Hill, London, N. 10.
- 1919 O'Brien, Thomas Edwin Hughes, B.Sc. (Liv), 66, Fern Grove, Liverpool. (R.E.)

# Date of

## ASSOCIATES.

- 1918 O'Callaghan, Patrick, A.R.C.S.I., 80. Chaworth Place, S. Circular Road, Dublin. (R.E.)
- 1917 Ogg, William Gammie, M.A., B.Sc. (Aberd.), Craigbank. Cults, Aberdeenshire.
- 1916 Ogilvie, James Maclaren, B.Sc. (Edin.), 368, Easter Road, Leith, Scotland.
- 1919 O'Sullivan, Daniel Joseph. B.Sc. (N.U.I.), 5. Knockrea Terrace. Blackrock Road, Cork.
- 1919 O'Sullivan, Jasper Bartlett, B.Sc. (Lond.). Winterton, Finchley Road, Golders Green, N.W. 4.
- 1919 Oxley, Horace Finningley, B.A. (Cantab.), 23. Perrymead, Prestwich, Manchester.

## P

- 1918 Page, Harold James, M.B.E., B.Sc. (Lond.), R.H.S. Gardens, Wisley, Ripley, Surrey. (Captain, R.F.A.; twice mentioned in despatches.)
- 1917 Page, Hubert Ernest, B.Sc. (Lond.), 62, The Rand. Eastriggs, Dumfriesshire.
- 1917 Painter, George Macaulay, B.Sc. (Lond., 24, Woodsome Road, London, N.W. 5. (Captain, Suffolk Regt.)
- 1915 Palmer, Charles Wilfrid, B.Sc. Tech. (Vict.), Heaton House, Wilmslow Road, Withington, Manchester.
- 1919 Palmer. Herbert Charles, B.A. (Cantab.), Emmanuel College, Cambridge.
- 1905 Park, Robert, M.B., Ch.B. (Edin.), 13, Eildon Street, Edinburgh. (Captain, R.A.M.C.)
- 1917 Parke, Victor Emmanuel, M.A., B.Sc. (Edin.), 11. Jameson Place, Leith.
- 1917 Parker, Albert, D.Sc. (Birm.), Dept. of Coal, Gas and Fuel, The University, Leeds.
- 1919 Parker, Horace Victor, B.A. (Cantab.), 5, Queens Gardens. Benton-Newcastle-on-Tyne. (Captain, R.F.A.; M.C.)
- 1917 Parker, Leslie Henry, M.A. (Cantab.), D.Sc. (Lond., 4. Leigham Gardens. Leigham Court Road, Streatham. London. S.W. 16. (Captain, R.E.)
- 1917 Parkes, John Wilfred, M.Sc. (Birm.), c o Messrs. W. & H. M. Goulding. Ltd., East Wall, Dublin.
- 1917 Parkin. Arthur Francis. M.Sc. (Melbourne), Commonwealth Labaratory, Flinders Lane, Melbourne, Australia.
- 1918 Parrish, John, B.Sc.Tech. (Manc.), 7, Durants Road, Ponders End. Middlesex.
- 1918 Parrish. Percy. 64. Foyle Road. Blackheath, London, S.E. 3.
- 1918 Parry, Reginald Ezra, M.Sc. (Melbourne), Chemistry Dept., Perth Technical School, W. Australia. (Sergeant, A.I.F.)

- 1919 Parsons, Arthur Edwin, B.Sc. (Lond.), Oakhurst, New Wanstead, London, E. 11.
- 1918 Paterson, James Bertram, B.Sc. (Lond., 4, Canberra Road, Gretna, Scotland. (R.E.)
- 1918 Patterson, William Hamilton, M.Sc. Manc.), Ballasalla, Isle of Man.
- 1908 Pattison, James William Henry, Drimnamona, Kilmacolm, Renfrewshire. (Major, Scottish Rifles.)
- 1919 Paul, David McLaren. B.Sc. (St. Andrews). 69. Russell Road, Whalley Range, Manchester.
- 1917 Paul, Ernest, B.Sc. (Lond., 12, Carless Avenue, Harborne, Birmingham.
- 1918 Paul, Hamilton, B.A. (Cantab., 108, James's Street, Dublin, (Lieut., R.E.)
- 1917 Payman, Joseph, M.Sc.Tech. (Manc.), A.M.S.T., 7, Darlington Street, Cheetham, Manchester.
- 1918 Pearce, Edmund, B.Sc. (Bris.). 13, Wemyss Road, Blackheath, London, S.E. 3. (R.E.)
- 1918 Pearce, Leonard Roger Batten, B.Sc. Lond.), 45. Craven Walk, Stamford Hill, London, N. 16. (Lieut., R.A.F.)
- 1918 Pearman, Sydney Albert. B.Sc. (Lond.), 5. South Hill Park Gardens, Hampstead, London, N.W. 3.
- 1918 Pearson, Herbert, B.Sc. (Vict.), 4. Leinster Gardens. Runcorn. Cheshire
- 1918 Pearson, Mrs. Leonore, M.Sc. (Manc.). 18, Wilmslow Road, Withington, Manchester.
- 1918 Pearson, Stanley, M.Sc. (Birm.), 21, Kingsway, Coventry.
- 1918 Peck, Harry, M.Sc. (Manc.), Featherstone, near Pontefract, Yorks.
- 1919 Peirson, Lewis Guy. B.A. (Cantab.). Bothwicks. Newquay, Cornwall.
- 1918 Pelling, Albert James, B.Sc. Lond.) 177, Selhurst Road, London, S.E. 25. (Captain, R.E.; D.S.O., M.C.)
- 1917 Pemberton, Edgar Stagg, B.Sc. (Lond.). 14. The Village, Lower Bebington, nr. Birkenhead, Cheshire. (2nd Lieut., R.E.)
- 1918 Pennington, Miss Hannah Smith de, B.Sc. (Lond.), 39, Dukes Brow, Blackburn.
- 1918 Perks, Frank Burstall, B.Sc. (Lond., Lynton, Kineton Road, Olton, near Birmingham.
- 1917 Perry, Guy Allan, Lincoln House, 28, Percy Street, Fartown, Huddersfield. (Lieut., R.A.S.C.)
- 1917 Phillips, David John Prichard, B.Sc. Wales, 51, Beaconsfield Road, Cannon Hill, Birmingham.
- 1918 Phillips, David Luther, B.Sc. Wales., 13, Park Wern Road, Sketty, Swansea.
- 1913 Phillips, Herbert Adie, 28. Searle Road, Wembley, Middlesex. (Friends' Ambulance Unit—Red Cross.)
- 1917 Phillips, Henry Wilfred Lewis, B.A. (Cantab.), 2. Balfour Crescent, Wolverhampton.

- 1917 Phillips. Richard, B.Sc. (Wales), 5, Oakdale Road, Waterloo, Liverpool.
- 1918 Pickard, Clarence Edward, 68. Aldeliffe Road, Lancaster. (a/Captain, R.E.)
- 1918 Pickard, Herbert, B.Sc. (Wales). Ex-Officers' Residential Club, 42. Lancaster Gate, London, W. 2. (Captain, Cheshire Regt.)
- 1918 Pickering Walter James, Coal Test Works, City Gas Dept., Nechells Works, Birmingham.
- 1916 Pickworth, Frederick Alfred, B.Sc. (Lond.), 70, Highfield Road, Dartford, Kent.
- 1919 Plumbridge, Douglas Victor, A.R.C.S., Ph.D. (Munich), Holmwood, South Kilworth, nr. Rugby.
- 1917 Polack, Wilfrid Gustav, M.Sc. (Liv.), B.Sc. (St. Andrews), Beacon House, Highlands Road, Runcorn, Cheshire.
- 1918 Pollard, Alfred George, B.Sc. (Lond.), A.R.C.S., D.I.C., Bodenham, Luton Road, Harpenden, Herts. (Captain, R.E.)
- 1919 Pollock, John Edwin, B.Sc. (Lond.). 40. Sun Street, Waltham Abbey. Essex.
- 1919 Pooley, John William, B Sc. (Lond.), 5, Lesbourne Road. Reigate, Surrey.
- 1913 Popham, Frederick James William, 71, Kennington Avenue, Bishopston, Bristol.
- 1912 Porter, John, "Rosny," Blairbeth Road. Burnside, Glasgow.
- 1918 Potter, Charles Etty, B.Sc. (Vict.), 15, Perrymead, Prestwich, Manchester.
- 1917 Powell, Charles Wilfred Roberts, Gladstone Avenue, Mosman, Sydney, N.S.W.
- 1918 Powell, David. B.Sc. (Wales), Broniwan, Rhydlewis, Henllan, Cardiganshire. (Captain, R.E.; M.C.)
- 1919 Powell, John Henry, 116. Denmark Hill, London, S.E. 5. (Sapper, R.E.)
- 1908 Powney, William Edmund Francis, London County Council, Public Health Department, 2, Savoy Hill, London, W.C. 2.
- 1919 Pracy, John Edward Findlater, B.A. (Cantab.) 25, Grosvenor Park-Camberwell, London, S.E. 5.
- 1917 Price, Tudor Williams. B.A. (Cantab.). M.Sc. (Wales), 102, Argyle Road. Saltcoats, Ayrshire, Scotland.
- 1918 Probert, Morris Ernest. B.Sc. (Lond.), Trevine. New Barnet, Herts (a/Chief Petty Officer, R.N.)
- 1918 Pugh, John, B.Sc. (Wales), 1, Lower Terrace, Cwmpark. Rhondda Valley.
- 1917 Pullman, Arthur Donald Rieber, B.Sc. (Vict.), 22, Aberdeen Park, Highbury, London, N. 5. (Devon Cyclists.)
- 1918 Punter, Ronald Arthur. B.Sc. (Lond.), c o Messrs. Nobel's Explosives Co., Ltd., 195, West George Street, Glasgow.
- 1918 Purdon, Arthur Oscar, B.Sc. (Leeds:, co D.A.D.G.R. & E., 5th Army, B.E.F. (Lieut., R.E.)
- 1918 Purves, George Thomson, co The Manvers Main Collieries, Ltd., Wath-upon-Dearne, near Rotherham.

## ASSOCIATES.

## Q

1919 Quinn, Gerald Grattan. A.R.C.S. Lond.), 6, Glenroyd, Spetland, Rochdale.

## R

- 1918 Radford, George Daniel, B.Sc. Lond , 30, Thornver oft Road, Portsmonth.
- 1912 Raistrick, Harold, M.Sc. (Leeds), Bio-chemical Laboratory, Cambridge.
- 1917 Rait, Patrick Walker, 6, Ibrox Place, Glasgow. (Lieut., R.F.A.)
- 1918 Randall, Ernest Leslie, 6, Belgrave Terrace, New North Road, Huddersfield.
- 1918 Randolph, Charles Edward, B.Sc. (Lond.), 21. Wentworth Street, Huddersfield.
- 1919 Rayald, Leonard Allan, B.Sc. Tech. Manc.), Fern. Bank, Burnage Lane, Withington, Manchester. (Lieut.)
- 1917 Rawling, Sidney Owen, B.Sc. (Lond.), 9. Braemar Place, Aberdeen. (Cadet, R.F.A.)
- 1918 Rawsthorn, Reginald Bromley, M.Sc. (Manc.), Worlfield, Stonyhurst, near Blackburn.
- 1918 Ray, Frederic Martin, B.Sc. (Lond.), 61, Musgrave Rand, New Cross, London, S.E. 14. (Lieut., R.E.)
- 1917 Ray, Robert, B.Sc. (St. Andrews and Cape of Good Hope); 2, Dalmeny Road, Tufnell Park, London, N. 7.
- 1918 Raymond, Leonard William, B.A., B.Sc., A.R.C.S. (Lond.), West End. Lifton, Devon. (Lieut., R.E.)
- 1913 Rayner, Edgar Alexander, B.Sc. (Lond.), Thurbw House, Station Road, New Barnet, Herts. (Corporal, R.E.)
- 1918 Read, Harold Richard, A.R.C.S.I., 16, Church Road, Wavertree, Liverpool.
- 1918 Rees. Edgar Charles, Messrs. Kynoch, Ltd., Umbogintwine, Durban. Natal. S. Africa.
- 1918 Reeves, George, B.Sc. (Lond.), A.R.C.S., D.I.C., e o British Pharmacy Oils, Ltd., Hunt's Lane, Stratford, London, E. 15.
- 1918 Regan, Colston James, B.Sc. (Lond.), 14. Penerley Road, Catford, London, S.E. 6. (Captain, R.A.M.C.)
- 1917 Reilly, Joseph, M.A., D.Sc. (N.U.I.), F.R.C.S.I., St. Ambrese, Woodside Road, Lower Parkstone, Dorset.
- 1918 Remfrey, Frederic George Percy, B.A. (Cantab.), D.Sc. (Geneva), c'o Hall Motor Fuel, Ltd., Pinner's Hall, Austin Friars, London, E.C. 2.
- 1918 Reynard, Herbert Corner, B.Sc. (Lond.), West Ewell, Surrey. (Captain. R.E.)
- 1917 Reynolds, Miss Grace Lechmere, B.Sc. (Wales). Salway Dyes Co., Murrell Hill Works, Carlisle.

- 1919 Reynolds, John, Brook House, Meltham Mills, Huddersfield.
- 1918 Rheinlander, Arthur Henry, B.Sc. (Lond.), St. Leonards, Rodney Road, New Malden, Surrey.
- 1905 Rhodes, Edwin, B.Sc. (Vict.), Wharncliffe, Lime Tree Avenue, Retford, Notts.
- 1918 Rhodes, Norman, M.Sc. (Leeds), c/o Mr. Horsfall, Stannary House, Halifax.
- 1919 Rial, Walter Percy. B.Sc., A.R.C.S. (Lond.), 33 Ventnor Street. Newland Avenue, Hull. (Lieut., attd. R.E.)
- 1919 Richards, Evan Matthew. B.Sc. (Lond.), 54, Springfield Road, St. John's Wood, London, N.W. 8. (Lieut., R.E.)
- 1919 Richardson, Donald Henry, B.Sc. (Lond.), Fernlea, Mapperley Plains, Nottingham.
- 1919 Rigby, Joe, M.Sc. (Manc., 9. Harpenden Road, Wanstead, London, E. 12.
- 1917 Riley, Albert, B.Sc. (Manc.), Westfield Lodge, Carr Lane, Thorner, near Leeds.
- 1918 Ritchie, John Edwin. M.A., B.Sc. (Aberd.), 23, Rosebery Street. Aberdeen.
- 1919 Ritchings, Walter, M.Sc. (Vict.). The Cowley Schools, St. Helens, Lancs.
- 1918 Roberts, Fred. B.Sc. (Wales), Tremlyn, Bala, N. Wales.
- 1917 Roberts, Miss Muriel, B.Sc. (Liv.), 36, The Judges Drive. Newsham Park, Liverpool.
- 1917 Roberts, Oswald, B.Sc. (Liv.). 1. Everest Road, Eltham, London, S.E. 9.
- 1918 Roberts, Robert Pierce, B.Sc. (Wales). Ty Eurgain, Cefn Eurgain, nr. Mold, N. Wales.
- 1918 Robertson, George Scott, M.Sc. (Dun.), The East Anglian Institute of Agriculture, Chelmsford.
- 1919 Robertson, John Alexander, Cottswood House, Gartsherrie, by Coatbridge, Lanarkshire.
- 1919 Robertson, John Braithwaite, M.A., B.Sc. (Edin.), Chemistry Dept., School of Mines and Technology, Johannesburg, S. Africa.
- 1918 Robertson, Robert Boswell, B.A. (Cape of Good Hope).
- 1912 Robertson, Stewart, c o Messrs, Bryant & May, Ltd., Bow, London, E. 3. (Royal Inniskilling Fusiliers.)
- 1918 Robinson, Clifford Hanks, B.A. (Toronto), Central Experimental Farm, Ottawa, Canada.
- 1917 Robinson, Eric, B.Sc. (Wales), Glan Aber, Farrar Road, Bangor, N. Wales.
- 1919 Robinson. Frederick John, Hughenden Lodge, Cowley, Middlesex.
- 1919 Robinson, George, B.Sc. (Manc.), H.M. Factory, Langwith, nr. Mansfield.
- 1919 Robinson, Percy Harry, B.Sc. (Lond.), 51, Melrose Avenue, Wimbledon Park, London, S.W. 19. (Staff-Captain, R.G.A.; M.C., mentioned in despatches.)

### ASSOCIATES.

- 1918 Robinson, Percy Leucock, M Sc. (Dun.), 60, Earl's Den. L. wfell Gateshead.
- 1918 Robinson, Miss Rona, M.Sc. (Manc.), Moseley Villa, Metter i R. al-Withington, Manchester.
- 1912 Robson, Cyril Robert, B.Sc. (Lond.), Deputy Assay Master, H.M. Assay Office, Bombay, India.
- 1918 Robson, Stanley, M.Sc. (Dun.), D.I.C., Hunsten, Charsworth Road Upper Parkstone, Dorset.
- 1919 Robson, William Pawson, Ph.D. (Halle), M.A. (Caperof Good Hope),
  Cordite Factory, Aruvankadu, Nilgiri Hills, India. (Lieut.,
  E. Yorks Regt.)
- 1918 Roche, James William, B.Sc. (Bris.), 83, Birch Luce, Longsight, Manchester.
- 1917 Rogers, Sidney John, B.Sc. (Lond.), 137, Clement's R. d. East Ham, London, E. 6.
- 1918 Ronca, James Francis, A.R.C.S., 176, Elms Road, Clapham, London, S.W. 4.
- 1919 Rooney, Thomas Edmund, A.M.S.T., National Physical Lab ratory Teddington, Middlesex.
- 1918 Rosebourne, Cyril. B.Sc. Wales), 55, Church Street, Tooling H. Mon.
- 1919 Resemblum, Alec Armstrong, B.Sc. (Melbourne). H.M. Lectory Avenmouth.
- 1918 Ross, James Stiven, M.A., B.Sc. (St. Andrews), 10, Latch Road, Birchin, Scotland. (Lance-Corporal, R.A.M.C.)
- 1918 Rothwell, Bernard Paul, M.Se. (Vict.), 30. Clyde Road, West Didsbary
  Manchester.
- 1917 Rowe, Frederick Maurier, M.Sc. (Leeds), 5, Woodbine Terrace. Latchford, near Warrington.
- 1919 Rowland, James Frederick Fothergill B.A. (Cantab.), 18. Kin. den Read W. Hampstead, London, N.W. 6.
- 1918 Roy, Charles Smart, Ph.D. (Jena), 4, Farnley Road, Chingford, Lendon, E. 4.
- 1917 Royal-Dawson, Henry, 9, Carlton Street, Bridlington, Yorks.
- 1917 Rudge, Ernest Albert, B.Sc. (Lond.), Technical College. Cardiff. (R.E.)
- 1919 Runeckles, Arthur Robert, B.Sc. (Lond., A.C.G.I., 10, Brudenell Mount. Hyde Park, Leeds.
- 1908 Russell, William Fraser, Ph.D. (Jena), 6, Brush Street, Norwalk, Conn., U.S.A.
- 1918 Ruston. Miss Monica Mary, B.Sc. (Lond.), Woodbine Cottage, East Peckham, nr. Tonbridge, Kent.
- 1918 Rydings, Eric Percy. B.Sc. (Lond.), Blarnaine. Drumchapel, Dumbartonshire. (Sub-Lieut., R.N.V.R.)

S

1918 Salt, Wilfred Austin, B.Sc.Tech. (Manc.), 53. Pinning: n R al. Gerten. Manchester. (Major, R.E.; M.C.)

- 1918 Sanders, Percy Harold, 11. Beech Road, Bournville, Birmingham.
- 1918 Sanderson, William Edward, 27, Westfield Avenue, Oakes, Huddersfield.
- 1917 Sandilands, James, I, Shorthope Street, Musselburgh, Scotland.
- 1917 Savage, Herbert, Mansfield House, Clifton Gardens, Maida Vale, London, W. 9.
- 1919 Scafe, Norman Edward, 222, Gladstone Street, Bradford, Yorks.
- 1918 Scarborough, Harold Archibald, M.Sc. (Birm.), 32, Vicarage Road, Smethwick, Staffs.
- 1918 Scharff. Godfrey Edward. B.A. (Cantab.), Knockranny. Bray, co. Wicklow. (R.E.)
- 1918 Schoeller, Walter Raymond. Ph.D. (Greifswald). 57, York Street. Baker Street, London, W. 1.
- 1910 Schwarz, Theodor, Director Técnico, Compañia National Mexicana de Dinamita y Explosivos, Dinamita, Durango, Mexico.
- 1909 Scott. Arthur William, A.C.G.I., 7. Riggindale Road, Streatham, London, S.W. 16. (2nd Lieut., R.G.A.)
- 1919 Scott, Edward Henry, B.Sc. (Dun.), 21, Dalver Avenue, Davyhulme, Urmston, nr. Manchester.
- 1918 Scott, James Lang, Twynholm, Bramley, Surrey.
- 1917 Scott, Robert, M.A., B.Sc. (Glas.). 4, Temple Road, Stowmarket, Suffolk.
- 1919 Scott, Thomas, M.Sc. (Liv.). 46. Merton Road, Bootle, Liverpool. (Major, R.F.A.; M.C.)
- 1919 Scouller, Walter Daly, M.Sc. (Leeds), Glanteifi, Stocks Lane, Chester.
- 1919 Scrase, Frederick John, B.Sc. (Lond.), 234, Battersea Park Road, London, S.W. 11. (Corporal, R.E.)
- 1917 Scully, Gerald Creagh, M.A. (Cape of Good Hope), Cape Explosives Works, Ltd., Somerset West, C.P., S. Africa.
- 1918 Selfridge, John, M.A., B.Sc. (Glas.), 90, Mannering Road, Shawlands, Glasgow.
- 1917 Sellars, Edwin Lloyd, M.Sc. (Manc.), 40, Centenary Terrace, Hooley Hill, near Manchester. (Captain, R.E.; M.C.)
- 1918 Sewill. John Waterlow, B.A. (Cantab.). 15, Russell Road, Whalley Range, Manchester. (Lieut., R.E.)
- 1918 Shallcross, Arthur, M.Sc.Tech. (Manc.), 19, Langdale Road, Heaton Chapel, Stockport. (Lieut., R.A.F.)
- 1918 Shankie, James. B.Sc. (Glas.), 52, Airlie Gardens. Hyndland. Glasgow.
- 1919 Shankie, Richard Sangster, B. Sc. (Glas.), 52, Airlie Gardens, Hyndland, Glasgow.
- 1910 Shankster, Harry, 138, Elgin Road, Seven Kings, Essex.
- 1919 Shannon, William Vivian, B.Sc. (Lond.), 13, Woodlands Avenue, Wanstead, London, E. 11.
- 1918 Sharp, Frederick Lawrence, 4, Rushwood Avenue, West Bridgford, Notts.
- 1917 Sheldon, Norman, A.R.C.S., Coronation Villas, Bamford, Derbyshire.
- 1917 Sheldon, Wilfred. M.Sc. (Manc.), 143, Bond Street, Macclesfield. (Corporal. Royal Fusiliers.)

- 1918 Shepherd, Douglas Howard, M.A., B.Sc. (Vict.), 46, Trafalgar R. al, Pendleton, Lancs.
- 1917 Shipston, Geoffry Thomas, B.Sc. (Lond.), 32, Moxley Road, Higher Crumpsall, Manchester. (Captain, Leicester Regt., attd. M. of M.)
- 1919 Shroff, Hasmukhlal Bhagvandas, B.Sc. Tech. (Marco, A.M.S.T., Kala-Bhavan Technical Institute, Baroda, India.
- 1917 Silvester, William Arthur, M.Sc. (Sheff.), 48, Netherton Road, Worksop, Notts.
- 1918 Simmons, William Hall, 45. Graven Road, Newbury, Bucks, (2nd Lieut., Bedfordshire Regt.)
- 1919 Singleton, Henry Percival, B Sc. (Queensland), Staff Residence, H.M. Factory, Avonmouth.
- 1918 Singleton, Leslie, B.Sc. (Lond.). (R.E.)
- 1918 Sinkinson, Eric. D.I.C., 14A, Albert Bridge Road, London, S.W. 11.
- 1919 Sissons, Alfred Thomas Stanley, B.Sc. (Melbourne), co University High School, Lygon Street, Carlton, Victoria, Australia.
- 1913 Skelton, Edward William, B.Sc. (Lond.), 78, Townshend Terrace, Richmond, Surrey.
- 1918 Skilling, William James. H.M. Fuel Research Station, Blackwall Lane, E. Greenwich, London, S.E. 10.
- 1919 Slann, Alfred Ernest Llewellyn, 31, Ranelagh Gardens, Stamford Brook, London, W. 6.
- 1918 Slater, James Cumming. 23, Vardre Road, Clydach-on-Tawe, nr. Swansea.
- 1918 Slater, John Wardle, B.Sc. (Manc.), 147. Acre Lane, Oldham.
- 1917 Slater, Leonard. M.Sc.Tech. (Manc.). Eden Curwens, Howard Place, Carlisle. (Lieut., R.E.)
- 1918 Slater, Wilfrid Ernest, M.Sc. (Vict.). 10. Marlborough Read, Lee, Lewisham, London, S.E. 13.
- 1918 Slater, William Kershaw, M.Sc. (Manc.), Eastdene, Chamber R. ad, Shaw, Lancs.
- 1911 Slim, George Edmundson. B.Sc. (Birm.), The Briars. Fordington Road, Winchester.
- 1917 Smeath-Thomas, John. D.Sc. (Liv.), 18, Gresford Avenue. Seft in Park. Liverpool.
- 1909 Smiley. George Alexander. B.Sc. (Lond.), Officer of Customs and Ex ise, Chepstow.
- 1919 Smith, Alton Ewart Clarence, B.A. (Cantab.), 19, Terlingham Gardens, Folkestone. (Captain.)
- 1919 Smith, Cyril Montague, Inglecroft, Cranley Villas, Muswell Hill R.ad. London, N. 10. (Captain, R.A.M.C.)
- 1919 Smith, Edgar Francis, Hampden Club, Hampden Street, London, N.W. I.
- 1918 Smith, Frank James, B.Sc. (Liv.). 36, Brelade Road, Liverp ed.

Date of

- 1918 Smith, Frederick William, B.Sc. (Lond.), 39, Ormonde Road, East Sheen, London, S.W. 14. (Lieut., Bedfordshire Regt., attd. M. of M.)
- 1918 Smith, George, M.Sc. (Viet.), 33, Queen Street, Gt. Harwood, Lancs. (A.M./II., R.N.A.S.).
- 1917 Smith, Henry Edgar, M.Sc. (Birm.), c/o Messrs. Meggitts (1917), Ltd., Sutton-in-Ashfield, Notts.
- 1918 Smith, John Campbell, B.Sc. (Edin.), Heriot-Watt College, Edinburgh.
- 1917 Smith, Joseph de Carle, B.Sc. (Lond.), West Lodge, Albemarle Road, Norwich.
- 1919 Smith, William, 10, Main Street, Stevenston, Ayrshire.
- 1918 Smout, Arthur John Griffiths, Laboratory, "C" Dept., Selly Oak Works, Birmingham.
- 1910 Solomon, Joseph Bernard, B.Sc., A.R.C.S. (Lond.), A.R.S.M., 56, Priory Road, London, N.W. 6. (Staff-Captain, R.A.F.)
- 1918 Somer, Arthur Joseph, B.Sc. (Lond.), 11, Clarence Road, Mottingham, Eltham, London, S.E. 9. (Sergeant, R.E.)
- 1918 Sorrell, Mrs. Janet Louisa, A.R.C.S.I., Ilfracombe, High View Avenue, Grays, Essex.
- 1919 Speakman, Gruffyd Thomas, B.Sc. (Wales). 6, Newton Road, Faversham. Kent.
- 1918 Spiers, Charles William, M.Sc. (Bris.), 1. Dundonald Road, Redland, Bristol. (Sergeant, R.E.)
- 1917 Spiers, Henry Michael, M.A. (Cantab.), B.Sc. (Lond.), c o Wetcarbonising, Ltd., Ironhirst Peat Factory, Ruthwell, R.S.O., Dumfriesshire.
- 1915 Spilman, George Herbert, 64. Dukes Avenue, Chiswick, London, W. 4.
- 1919 Stanhope, Percy Edward, 16. Bertram Road, Bradford, Yorks.
- 1918 Stanier, Harold, B.A. (Cantab.), Ivy Cottage, Saverley Green, Blythe Bridge, Stoke-on-Trent,
- 1918 Stansfield, John Firth, A.R.C.S., c/o Bethlehem Steel Co., South Bethlehem, Penna., U.S.A.
- 1919 Stanworth, James, B.Sc. (Manc.). co Massey, Gordon Road, Borrowash, near Derby.
- 1918 Stark, David Carmichael, Glaston Cottage, Victoria Avenue, Borrowash, nr. Derby.
- 1918 Stedman, Ernest, M.Sc. (Vict.). Upholland Grammar School. Orrell, Wigan. (Lieut., R.G.A.)
- 1918 Steele, Arthur Robert Victor, The Drive, Crossgates, nr. Leeds. (Lieut., R.E.)
- 1917 Stephens. Francis George Coad, The Cottage, Tenter Hill, New Mill, Huddersfield.
- 1918 Stephens, Victor Ewart, A.R.C.S.I., 25, Harcourt Street, Dublin.
- 1919 Stephenson, James. B.Sc. (Lond.), Oaklands West. Eltham Road, Lee, London, S.E. 12.
- 1918 Stern, Harry, B.Sc. (Lond.). 35. Marlborough Street. Brighton. Sussex. (Corporal, Middlesex Regt)

- 1919 Stevenson, James Arnold, 76, Hodges Street, Wigan. (A/M., R.A.F.)
- 1917 Steventon, Joseph William, B.Sc. (Wales), 25, Regent Street, Smethwick, Birmingham,
- 1918 Stewart, Alan West, D.Sc. (Brussels), 29. Westbere Road, Cricklewood, London, N.W. 2.
- 1916 Stewart, Andrew, B.Sc. (Glas.). 111. Petershill Road, Glasgow.
- 1919 Stewart. Robert Forbes, 35, Roxburgh Circus, Cardonald, Glasgow. (Lieut. R.A.F.; M.C.)
- 1913 Stich, Alexander Benham. M.B., Ch.B., B.Sc. (Glas.). Riccartsbar Avenue, Paisley.
- 1918 Stickings, Ralph William Ewart, O.B.E., B.Sc. (Lond.). D.I.C.. The Rowans, Ravensbury Park, Morden, Surrey. (Captain, R.A.M.C.)
- 1918 Still, Charles James, B.Sc. (Lond.), 65, Oak Road, Crumpsall, Manchester.
- 1919 Stocks, Frederick Arnold, B.Sc. (Manc.), Sonning, Leicester Road, Hale, Cheshire. (R.E.)
- 1918 Stocks, Herbert Holroyd, M.Sc. (Leeds), 5, Britannia Terrace, Cleckheaton, Yorks. (Corporal, R.E.)
- 1919 Stokes, Joseph Arthur, B.Sc. (Lond). Field Cottage, Bradley, nr. Huddersfield.
- 1918 Stokes, William Henry, 2, Lydgate Road, Coventry.
- 1918 Stokoe, William Norman, B.Sc. (Lond.). Craigmillar Creamery Co., Ltd., Craigmillar, Midlothian.
- 1917 Stone, Horace Gilbert, B.Sc. (Lond.), S. Hilton Crescent, Hilton Park, Prestwich, Manchester,
- 1917 Stones, George Bertram, B.Sc. (Vict.), 37, Edgbaston Road, Smethwick, Birmingham.
- 1917 Stopford, Thomas Rinck, M.Sc. (Manc.), Woodbank, Macclesfield.
- 1913 Storey, Mrs. Dorothy Jessie, Home Cottage, Wick, near Bristol.
- 1919 Straw, Keith Blundell.
- 1918 Streatfeild, Frederick Henry, 54, Belgrave Road, Wanstead, London, E. 11.
- 1918 Stringfellow, William Arthur, 7. Glenalla Road, Llanelly, S. Wales.
- 1918 Stubbs, Charles William Oswald, B.Sc. (Melbourne), Cordite Factory, Maribyrnong, Victoria, Australia.
- 1918 Stutterd, Lancelot Frederick Norman, B.Sc. (Tasmania). Ashleigh, Winyard, Tasmania.
- 1917 Sugden, James Netherwood, B.Sc., A R.C.S. (Loud.), D.I.C., 12, Burstock Road, Putney, London, S.W. 15. (Captain, R.E.)
- 1917 Sugden, Reginald, 84, Tong Road, Leeds.
- 1917 Sugden, Samuel, A.R.C.S., 15, Radipole Road, Fulham, London, S.W. 6. (R.E.)
- 1919 Sumner, Andrew Theodore, B.Sc. (Lond.), 4, Fulham Park Road. London, S.W. 6. (Major, R.E.; M.C.)
- 1911 Sutcliffe, John Algernon Lacy, c/o The East Coast Oil and Produce Co., Ltd., Toward Road Works, Sunderland.

## ASSOCIATES.

- 1917 Symonds, Gwilym, B.Sc. (Wales). Daisy Bank, Poplar Grove, Sale, Cheshire.
- 1918 Swann, Herbert, B.Sc. Tech. (Manc.), 62 Old Road, Blackley, Manchester.

## T

- 1917 Taberner, Edwin, M.Sc. (Manc.). Chemistry Department, Mining and Technical College, Wigan.
- 1902 Tainsh, Peter Wright, 1, Craiglands, Spital. Cheshire.
- 1912 Tallantyre, Snow Blagburn, B.Sc., A.R.C.S. (Lond.), Research Laboratory. Tar and Ammonia Products Works. Beckton, London. E. 16.
- 1918 Tatam, George William Gerald. 3, Courtney Road, Waddon, Croydon, Surrey.
- 1918 Tatton, Samuel Bertram, B.Sc. (Lond.), 7, Greenclose Road, Ilfracombe.
- 1917 Taylor, Arthur, M.Sc. (Leeds), 179, Beeston Road, Leeds.
- 1919 Taylor, Charles Williams, B.Sc. (Lond.), 24, Elsiedene Road, Winchmore Hill, London, N. 21. (R.E.)
- 1918 Taylor, Francis, B.Sc. (Vict. and Leeds), Westgate House, North Cave, East Yorks. (Lieut., R.E.)
- 1918 Taylor, Hubert. B.Sc. (Birm.). West Mount, Crosbie Road, Harborne, Birmingham.
- 1919 Taylor, Miss Millicent, D.Sc. (Bris.), Clough Cottage, Charlton Kings, Cheltenham, Gloucestershire.
- 1919 Telfer, Stephen Veitch. M.B.Ch.B. (Glas.). 533, Victoria Road, Crosshill, Glasgow. (Captain, R.A.M.C.)
- 1918 Templeman, William Henry, B.A. L.L.M. (Cantab.) R.N. Ordnance Depôt, Crombie, nr. Dunfermline. (Captain, R.A.O.C.)
- 1918 Thin, Russell Gibson, B.Sc. (Edin.), 2. Chalmers Crescent, Edinburgh. (Captain, Divisional Gas Officer.)
- 1918 Third, John. M.A., B.Sc. (Aberd.). Messrs. Nobel's Explosives Co., Ltd. Ardeer Factory, Stevenston, Ayrshire.
- 1918 Thole, Ferdinand Bernard, D.Sc. (Lond.), Meadhurst, Sunbury-on-Thames.
- 1917 Thomas, Alfred Ernest, B.Sc. (Wales), 15. Park Place, Merthyr Tydfil.
- 1918 Thomas, David, B.Sc. (Wales), 9, Pavilion Terrace, London, W. 12.
- 1919 Thomas, Fred, B.Sc. (Wales), Grove House, Kirk Lane, Yeadon, nr. Leeds. (Lieut., R.N.V.R.)
- 1918 Thomas, Hugh Arwel. B.Sc. (Wales), 34, High Street. Rhos. Wrexham, N. Wales.
- 1918 Thomas, John Sidney Gordon, B.Sc., A.R.C.S. (Wales and Lond.). Physical Laboratory, South Metropolitan Gas Coy., 709, Old Kent Road, London, S.E. 15.
- 1918 Thomas, Richard, M.Sc. (Wales), 30, Rock Lane West, Rock Ferry, Cheshire.

- 1918 Thomas, William. B.Sc. (Wales), Village View, Clynderwen, S. Wales. (Lieut., Cheshire Regt.)
- 1918 Thompson, Guy Maurice. B.Sc. (Lond.), 69. Bigyn Road, Llanelly, Carm.
- 1919 Thompson, Herbert Bryan, M.Sc. (Birm.), Ph.D. (Würzburg), Rederoft, Shobnall, Burton-on-Trent.
- 1919 Thompson, Mark, B.A. (Cantab.), 124, Wilford Grove, Nottingham.
- 1903 Thorburn, James, 30, Cromarty Avenue, Newlands, Glasgow.
- 1919 Tilley, Cecil Edgar, B.Sc. (Adelaide and Sydney), Department of Chemistry, The University, Sydney, New South Wales.
- 1917 Timbrell, John. B.Sc. (Lond.). 40. Beeches Road. West Bromwich. Staffs.
- 1919 Tincknell, George Mark, B.Sc. (Bris.). 1. Sunny Hill Villas, Bruton, Somerset. (R.E.)
- 1918 Todd, Ernest Herbert, M.A. (Oxon.), 6. Thornbury Avenue. Southampton. (R.E.)
- 1919 Tompkin, Albert, 104, Lenton Boulevard, Nottingham.
- 1918 Topp, Arthur Albert, Cordite Factory, Maribyrnong, Melbourne, Victoria, Australia.
- 1919 Toppin, Richmond Douglas, co Messrs, Burroughs, Wellcome & Co., Victoria Street, Waterloo, N.S.W., Australia. (A.I.F.)
- 1918 Towse, Walter, c'o Messrs, Clark, Son & Morland, Ltd., Glastonbury.
- 1919 Trickett, Anthony Berry, M Sc. Tech. (Manc.), 245, New North Road, London, N. 1.
- 1919 Trippier, Frank, B.Sc. (Manc., Major Street, Crawshawbooth, Manchester, (R.N. Experimental Station.)
- 1918 Trotter, John Robert, A.R.C.S.. Barking Chemical Co., Creeksmouth Road, Barking, Essex.
- 1918 Trotter, William, A.R.C.S. (Lond.). 9. Southfield Square, Bradford. (Lieut, Northumberland Fusiliers.)
- 1918 Tryhorn, Frederick Gerald. M.Sc. Liv., 45. Hallville Road, Mossley Hill, Liverpool. (Sub-Lieut., R.N.V.R.)
- 1917 Turner, Eustace Ebenezer, M.Sc. (Lond.), The Organic Chemical Laboratory, The University, Sydney, N.S.W.
- 1918 Tutton, Henry Ralph, I, Wentworth Street, Huddersfield.
- 1918 Twine, William Alfred, Aden House, Hillaries Road, Gravelly Hill.
  Birmingham.

- 1917 Upton. Adolph William Henry, A.C.G.I., c/o Messrs. Levinstein, Ltd... Blackley, Manchester.
- 1918 Urquhart. Hugh Campbell. B.Sc. (Melbourne), "Craigston." Coppin Street, E. Malvern, Melbourne, Australia.

## ASSOCIATES.

## V

- 1917 Vakil. Kapilram Hardevram, B.A. (Bombay), M.Sc. Tech. (Manc.), Santa Cruz, Bombay, India.
- 1917 Valentine, Abraham Henriques, M.Sc. (Vict.), 167, Invicta Road, Sheerness, Kent. (Public Schools Batt.)
- 1918 Vallance, Reece Henry. B.Sc. (Birm.), 284, Franklin Read, King's Norton, Birmingham. (R.E.)
- 1919 Venn, Hubert John Patridge, B.Sc. (Lond.), Twyford, Hargate Drive. Hale. Cheshire.
- 1918 Vickers, William, B.Sc.Tech. (Manc.). 27. Welbury Drive, Manningham, Bradford, Yorks. (Sergeant, R.E.)
- 1918 Vincent, John Willford, B.Sc. (Bris.), 7, Margaret's Buildings, Brook Street, Bath.

## W

- 1918 Waele, Armand de. Messrs. John Hall & Sons. Ltd., Broadmead, Bristol.
- 1919 Walden, Alfred Edward, B.Sc. (Lond.), 71. High Street. Slough, Bucks.
- 1919 Walker, Charles, M.Sc. (Vict.), Waterloo House, Learnington Spa, Warwickshire, (Lieut., R.E.)
- 1918 Walker, Eric. B Sc. (Wales). c,o Willis Walker, Esq., 28, Palace Avenue, Llanelly, S. Wales. (Captain, R.E.)
- 1918 Walker, Frederick Handel, B.Sc. (Dun.), 3, Stannington Grove, Heaton, Newcastle-on-Tyne. (Captain.)
- 1918 Walker, Frederick Wilson, A.R.C.S. (Lond.), Jesmond House, Diamond Street, Saltburn-by-the-Sea. (Sergeant, R.E.)
- 1919 Walker, John Henry, A.R.T.C., Gourepore Works, Naihati, E.B. Ry., Bengal.
- 1918 Walker, Richard Gaston, 209, Ripon Street S., Ballarat, Victoria, Australia.
- 1917 Walker, Thomas Kennedy, B.Sc. (Manc.), Meadow Bank, Hollingworth, near Manchester.
- 1918 Wallace, Thomas. M.Sc. (Dun.), 44, Garden Terrace, Earsdon, Northumberland. (Captain, R.E.; M.C.)
- 1917 Walsh, Michael Joseph, M.Sc. (N.U.I.), Continuous Reaction Co., Ltd., Hyde, Cheshire.
- 1918 Walsh, Thomas Crosbie. 53, Rosebery Road, Muswell Hill. London, N. 10.
- 1919 Walters, David Henry, B.Sc. (Wales). Maesgwyn, Gnoll Park Road, Neath, Glam.
- 1918 Ward, Percy James. M.Sc. (Birm.), The Indo-Burma Petroleum Co., Ltd.. Seikkyi Refinery, near Rangoon, Burma. (Sapper, Indian Defence Force.)
- 1917 Wardlaw, William, M.Sc. (Dun.), The University. Edmund Street, Birmingham.

- 1917 Warneford, Francis Henry Sweeting, B.A. (Cantab.), B.Sc. (McGill), St. John's, Antigua, British West Indies.
- 1918 Waters, Percy Wharton, 3. Stanley Road, Heaton Moor, Stockport. (Lieut., R.E.; Croix de Guerre.)
- 1918 Watkinson, Hugh Leslie, B.A. (Cantab.). 29. Bolton Road, Walkden, Manchester.
- 1919 Watson, Miss Amy Rose, B.Sc. (Lond). 27, Union Road, Clapham, London, S.W. 4.
- 1918 Watson, Herbert Ben. B.Sc. (Wales), Drummond, Llandudno. (R.E.)
- 1908 Watson, Herbert Edmeston, D.Sc. (Lond.), Indian Institute of Science, Bangalore, India.
- 1918 Watson, Herbert Louis, B.Sc. (Aberd.), Brooklyn, 53, Aytoun Road, Pollokshields, Glasgow. (Sergeant, R.E.)
- 1918 Watson, John, B.Sc. (Dun.), 4. Kendrew Street, Darlington. (Captain Commandant Gas School; M.C.)
- 1919 Watson, Thomas, M. A. (California). 2,151, Center Street, Berkeley, California, U.S.A.
- 1917 Watt, Joseph James, B.Sc. (Lond.), Messrs, Bass, Ratcliffe & Gretton, Burton-on-Trent. (Lieut., R.E.)
- 1918 Wearing, Cyril Murray, B.Sc. (Birm. 10, Queen's Road, Leytonstone, London, E. 11. (Corporal, R.E.; M. of M.)
- 1918 Weaver, William, B.Sc. (Manc), 125, Leonard Road, Handsworth, Birmingham.
- 1919 Weaving, Archibald Arthur, B.Sc. (Birm.), 53, Mayfield Road, Moseley, Birmingham.
- 1917 Webb, Harry William, M.Sc. (Birm.). 29. South Road, Smethwick, Birmingham. (Lieut., Royal Warwickshire Regt.)
- 1917 Webb. Henry Marshall, B.Sc. (Lond.), Oak Croft, Chirk. Denbighshire. (Captain, R.E.)
- 1918 Webster, Thomas Arthur, 1B. Tressillian Crescent, London, S.E. 4.
- 1918 Weeks, Frederick William, 270, Blackburn Road, Edgworth, near Bolton.
- 1918 Weir, Alexander Bertram, B.Sc. (Edin.), Duff House, Banff, Scotland.
- 1919 Weiss, Augustus Frederick, B.Sc. (Lond.), Sandown Villa, Benhill Road, Sutton, Surrey.
- 1918 Welch, Marcus Baldwin, B.Sc. (Sydney), Roto-iti, Boyle Street, Mosman Bay, N.S.W.
- 1918 Welch, Sidney Arthur, B.Sc. (Lond.), Lime Cottage, St. John's, Redhill, Surrey.
- 1916 Wells, Ernest Edmund, B.Sc. (Lond.), 10, Sorbie Road, Saltcoats, Scotland.
- 1918 Welsford, Giles Hadden, 33, Delamare Mansions, London, W. 9. (Captain, East Yorks. Regt.)
- 1918 West, Donald Willoughby Capon, A.C.G.I., Slinfold, Horsham, Sussex. (2nd Lieut., R.E.)
- 1918 West, Joseph Dominic Francis, Experimental Section, N.A.D., R.A.F., Aboukir, Egypt. (Lieut. R.A.F.)

- 1918 West, Ralph Winton, A.R.C.S., 203, Casewick Road, W. Norwood, London, S.E. 27. (Captain.)
- 1918 Westman, Le Roy Egerton, M.A. (Toronto). Editor, Canadian Chemical Journal, 72, Queen Street, W., Toronto, Canada.
- 1918 Weston, Edmund Percy. B.Sc. (Dun.), 43. North View Terrace, Benwell, Newcastle-on-Tyne. (Lieut., Northumberland Fusiliers.)
- 1918 Weyman, Geoffrey, M.Sc. (Dun.), The Cwm. Saltwell Road, Low Fell, Gateshead-on-Tyne. (Lieut.. General Reserve of Officers.)
- 1918 Whalley, George William, M.Sc. (Manc.), Secondary School, Nelson, Lancashire,
- 1918 Wheatley, Arnold Herbert Maurice, B.Sc. (Leeds), 27, Belle Vue Crescent, Llandaff North, Glam.
- 1918 Wheatley, William, M.A. (Oxon.). 63, Flanders Mansions, Bedford Park, London, W. 4.
- 1917 Wheeler, Edward. A.C.G.I., Sefton, 117, Main Road, Sidcup, Kent.
- 1919 Wheeler, Walter Charles Gordon. B.Sc. (Q.U.I.), 35, The Common, Woolwich, London, S.E. 18.
- 1918 Whitaker, Arnold, B.Sc. A.R.C.S. (Lond.), D.I.C., The Royal Naval Cordite Factory, Holton Heath, Dorset.
- 1919 Whitaker, Herbert, M.Sc. (Leeds), A.M.C.T., 30, Avon Road, Hale, Cheshire.
- 1918 Whitaker, Roland Stead B.Sc. (Sheff.), "Clayton," Broom Road, Rotherham.
- 1917 White. Albert Greville, B.Sc. (Wales . Lossie. Eglinton Street, Saltcoats, Ayrshire. (2nd Lieut. Cheshire Regt.)
- 1910 White, Charles Josiah, B.Sc. (Syd.), The Training College, Sydney, N.S.W., Australia.
- 1917 White, Gerald Noel, D.Sc. (Lond.). 6, Fairfax Road, Prestwich, Manchester.
- 1918 White, John William, B.Sc. (Lond.), c/o E.C. Powder Co., Ltd., Green Street Green, Dartford, Kent.
- 1919 Whitfeild, Bernard Wyndham, 48, Upper Richmond Road. East Putney, London, S.W. 15.
- 1918 Whitham, Harry, 11, Stanley Road. New Ferry, Birkenhead.
- 1918 Whittaker. Croyden Meredith. B.Sc. (Vict.). 55, Cleveland Road. Huddersfield.
- 1919 Whitton, William Alexander, B.Sc. (Vict.), M.Sc. (Liv.). The Grammar School, Ross, Herefordshire.
- 1918 Whitworth, Cecil William, A.C.G.I.. 11, St. Andrew's Road. Bedford-(R.N.A.S.)
- 1917 Wignall, Harry, M.Sc. (Manc.), 16. Roseneath Road, London, S.W. 11.
- 1919 Wikner, Sigurd Albert Walfrid, The Newcastle-on-Tyne and Gateshead Gas Co.. By-Products Works, St. Anthony's, Newcastle-on-Tyne.
- 1918 Wilde. William, 111, Manchester Road, Hapton, near Burnley.

### ASSOCIATES.

- 1918 Wilkie, Arthur Leslie, 6, Wellington Villas, Arundel Street, Nottingham. (Captain, York and Lanes, Regt.; mentioned in despatches.)
- 1917 Wilkins, Charles Reginald, B.Sc. Lend., S. Crookston Road, Eltham, London, S.E. 9.
- 1918 Wilkinson, Harry, Dept. of Dyeing, Technical College. Huddersfield.
- 1918 Williams, Charles Gorden, B.Sc. (Lond.), Technical Institution, Victoria Road, Swindon, Wilts.
- 1917 Williams, David Emrys, B.Sc. Wales, Bryn Awel, Bryn, near Corwen, North Wales. (O.C.B.)
- 1919 Williams, Edward Thomas, M.Sc. (Liv., 116, Well Lane, Higher Tranmere, Birkenhead, Cheshire. (R.E.)
- 1919 Williams, Edwin, B.Sc. (Lond.), 30, De Burgh Street, Canton. Cardin.
- 1917 Williams, Evan Clifford, M.Sc. Manc.', 18, Fitzwilliam Street, West. Huddersfield, (Captain, East Yorkshire Regt.)
- 1918 Williams, Frederick, M.A. (Oxon.), S. Blackbank, H.M. Factory, Gretna.
- 1918 Williams, Harold Wanson, B.Sc. Wales, Heathfield, Risca, Mon.
- 1918 Williams, Harry, Fairfield Willows, S. Benfleet, Essex.
- 1919 Williams, Harry, B.Sc. (Manc.), 78, The Rand, Eastriggs, Dumfriesshire.
- 1918 Williams, Henry James. B.Sc. Wales . 12. High Street, Gilfach Goch. Glam.
- 1918 Williams, John Guilfoyle, B.Sc. (Lond.), H.M. Factory, Langwith, nr. Mansfield. Derby.
- 1918 Williams, Percy Noel, M.Sc. (Liv.), 22. Hampden Road, Birkenhead. (Corporal, R.E.)
- 1918 Williams, Walter Beynon, B.Sc. (Wales . Grammar School, Yarm. Yorks.
- 1919 Williams, William, B.Sc. (Lond.), Shaftesbury House, Leominster.
- 1917 Williamson, William Turner Horace, B.Sc. (Aberd.). 36, Gladstone Place, Aberdeen.
- 1918 Willson, Francis George, B.Sc. (Lond. and Bris.', c'o The Copper Laboratory for Economic Research, Rickmansworth Road, Watford, Herts. (Lieut., M. of M.)
- 1918 Willstrop, John William Wesley, B.Sc. (Birm.), Dunbar, Fellows Road, S. Farnborough, Hants.
- 1918 Wilson, Donald Major, Fernley House, Crescent Road, Ipswich. (Major. R.E.; M.C., Croix de Guerre, Chevalier de l'Ordre de la Couronne.)
- 1919 Wilson, Ernest Percival, M.Sc. (Leeds), Coney Moor, Methley, nr. Leeds. (R.E.)
- 1917 Wilson, Fred Ernest, B.Sc. (Lond.), 20, Dallin Road, Shooter's Hill, London, S.E. 18.
- 1918 Wilson, William John, A.C.G.I., Haslemere, Lyndhurst Gardens, Finenley, London, N. 3.
- 1918 Winmill, Thomas Field, B.Sc. (Lond.), B.A. (Oxon.). High Cliff, New Whittington, near Chesterfield.

### ASSOCIATES.

- 1918 Wintle, Albert Watkins Maggs, 170, Newbridge Road. St. Anne's Park, Bristol.
- 1918 Wisbey, Ewart Osmond, B.Sc. (Wales), 60, Bankfield Road, Manchester Road, Huddersfield.
- 1918 Wiseman, Harry, M.A., B.Sc. (Aberd.), Kinloch. Cairns Road, Cambuslang, Glasgow.
- 1918 Wolfe, Harold Maurice, M.Sc. (Leeds), Cliff Lawn, Cliff Road, Hyde Park, Leeds.
- 1917 Wood, Arthur Samuel. B.Sc. (Lond.), Municipal Technical School, Birmingham.
- 1919 Wood, Cecil William. 11, Macaulay Road, Clapham Common. London, S.W. 4. (Lieut., R.F.A.)
- 1918 Wood. Charles Edmund, M.Sc. (Birm.). The University, Edmund Street, Birmingham.
- 1919 Wood, Frederick Charles, B.Sc. (Lond.), 576, Stretford Road, Old Trafford, Manchester. (Lieut., R.A.F.)
- 1918 Wood, James William. M.Sc.Tech. (Manc.), The Fuel Dept., The University, Leeds.
- 1918 Woodhead, Arthur Edmund, B.Sc. (Leeds), Bermerside, Cornwall Road, Harrogate. (Captain, R.A.M.C., attd. R.E.)
- 1917 Woodmansey, Arnold, B.Sc. (Leeds), 12, Ridgeway Terrace, Hyde Park, Leeds.
- 1919 Woods, Greatrex Johnson, 60, Regent's Park Road, Primrose Hill, London, N.W. 1. (Captain, R.A.F.)
- 1918 Woodworth, William Fitzgerald, A.R.C.S.I., 63, Kenilworth Square, Rathgar, Dublin, Ireland.
- 1918 Worcester, Darcy, B.Sc. (Lond.), Springford, Coxford Road, Lordswood, Southampton.
- 1919 Wright, Allister Maclean, P.O. Box 617, Christchurch, New Zealand. (Captain, N.Z.M.C.)
- 1918 Wright, Charles, B.Sc. (Leeds), Springfield Mount, Lake Lock, Stanley, Wakefield.
- 1918 Wright, Miss Winifred, B.S2. (Birm.). c/o Messrs. Johnson & Sons, Manufacturing Chemists, Ltd., Hendon Works, Renters Avenue, Hendon, London, N.W. 4.
- 1917 Wynn, William ()wen Roderick, 102, Queen's Road, Wimbledon, London, S.W. 19. (2nd Lieut., R.E.)

# Y

- 1919 Yajnik, Narbheshanker Amarji, M.A. (Bombay), Horman Christian College, Lahore, India.
- 1919 Yarrow, George Ernest. B.Sc. (Dun.), Holyrood House, First Avenue, Heaton, Newcastle-on-Tyne. (Lieut.)
- 1919 Yeats, Howard, B.Sc. (Lond.), 3. Clock House Road, Beckenham, Kent. (Captain, M.G.C.)

Date of Admission	ASSOCIATES.
1917	Young, James, c/o Messrs. A. Wardie & Co., King's Langley, Herts.
1918	Young, Roland Francis, 2, Aberdeen House, Kenton Street, Russell Square, London, W.C. 1.
1918	Young, William, M.A., B.Sc. St. Andrews), Toorak, South Beach. Salt- coats, Ayrshire,
	Z
1918	Zealley, Alec Thomas Sharland, Hon.B Sc. (Lond.), Coly Mills, Colyton, Devon.
1916	Zilva, Sylvester Solomon, Ph.D., Giessen), Lister Institute of Preventive Medicine, Chelsea Gardens, London, S.W. 3.

NUMBER OF	Assoc	CIATES						* * *		1.236
		SU	MMA	RY (	OF M	EMB	ERS.			
Fellows			• • •				***			1,520
Associates			• • •		***				* * *	1,236
										2.756

### STUDENTS.

After each Student's name is given, in brackets, that of the Fellow who signed his Application Form, or that of the College from which he applied.

### Date of Admission

# Α

- 1911 Abelson, Phineas. (R.A.M.C.)
  (Finsbury Technical College, London.)
- 1919 Adams, Basil Albert, Lynwood, 43, Cromwell Road, Beckenham, Kent. (H. B. Brown, F.I.C.)
- 1915 Aitken, William Edington, 35, Argyle Crescent, Portobello, Edinburgh. (Heriot-Watt College, Edinburgh.)
- 1919 Allan, Hamish. 16, Tavistock Square, London, W.C. 1. (University College, London.)
- 1918 Allen, Frank Laurence, 300, Central Park Road, East Ham, London, E. 6. (East London College, London.)
- 1918 Angus, George Bagrie, 24, Clarence Street, Edinburgh. (King's College, London.)
- 1918 Asdell, Sydney Arthur, c/o Mrs. Breghan, 4, Wilson Road, Birchfields, Birmingham.

  (Municipal Technical School, Birmingham.)
- 1917 Atkinson, Clifford, 12, Camberley Street, Dewsbury Road, Leeds. (Cadet, R.A.F.)
  (Thomas Fairley, F.I.C.)
- 1918 Awcock, George Alec, 26, Blenheim Crescent, South Croydon. (3rd A/M., R.A.F.)
  (Finsbury Technical College, London.)
- 1918 Ayling, Ernest Edward, Argyle, Woodthorpe Road, Ashford, Middlesex. (King's College, London.)

# В

- 1919 Backes, Joseph John Valentin. Braemar, Harold Wood, Essex. (Imperial College of Science and Technology, London.)
- 1917 Bagshaw, Cyril Rowbottom.
  (G. D. Elsdon, F.I.C.)
- 1919 Baguley. Noel Gregory, 23, The Park, Newark-on-Trent. (University College, Nottingham.)
- 1918 Bailey, Wilfred Arthur, 16, Heathwood Gardens, Old Charlton, London, S.E. 7.
  (Sir Robert Robertson, K.B.E., F.R.S.)
- 1916 Baines, Edward Robinson, 99, Eastgate, Louth, Lines. (School of the Pharmaceutical Society.)

- 1916 Bakes, William Edgar, 10. Cleveland Street, Holgate Road, York (I. E.) (The University, Leeds.)
- 1917 Barber, Harold Hayden, B.Sc. (Lond.). 38. Vicarage Avenue, Proy. (I.A.M., R.N.A.S.)
  (University College, Nottingham.)
- 1914 Barclay, Alexander, 53. Cross Oak Road, Berkhamsted, Herts. (R.E.) (Imperial College of Science and Technology, London.)
- 1918 Barklie. Robert Henry Phuglas, Penton Lodge, Old Lodge Lanc. Purley, Surrey.
  (King's College, London.)
- 1919 Barr, William, 100. Mys re Road, Lavender Hill, London. S.W. 11. (E. V. Evans, M.B.E., F.I.C.)
- 1907 Barry, William Redm nd. 86, Oakley Street, Chelsea, London, S.W. 3. (Lieut., R.N.D.)
  (Royal Technical College, Glasgow.)
- 1918 Bateman, Edgar William, 40, Vernon Gardens, Seven Kings, Essex. (East London College, London.)
- 1916 Beach, Frederick Frank, 18, Prince Street, Bristol. (Edward Russell. B.Sc., F.I.C.)
- 1919 Beardsley, Arnold Reginald, 4, Oxford Street, Long Eaton, nr. Nottingham.
  (University College, Nottingham.)
- 1916 Beck, Clarence Walter, Morville, The Avenue, Roundhay, Leeds, (R.A.S.C.)
  (The University, Leeds.)
- 1915 Becker, Harry Galvin, 15, York Road, Rathgar, Co. Dublin. (Royal College of Science, Dublin.)
- 1915 Beecroft, Sydney Bowers, 12a, Mariner's Terrace, Dewsbury Road, Leeds, (Signaller R.N.V.R.) (A. R. Smith, M.Sc., F.I.C.)
- 1910 Behrens, Mrs. Gwen, 15. Lindfield Gardens, Hampstead, London, N.W. 3.

  (The University, Cambridge.)
- 1917 Belasco, Harry George. Temple Cottage, Hereson Road, Ramsgate. (East London College, London.)
- 1916 Benstead, Thomas Bruce, Plomont, Grovehall Drive. Boeston. Leeds.
  (R.A.S.C.)
  (The University, Leeds.)
- 1917 Bentley. Thomas Leslie James, 5, Fairlawn Road. Wimbledon. London, S.W. 19. (Royal W. S. Regt.)
  (Imperial College of Science and Technology, London.)
- 1919 Bilham, Philip Leo, 22, Old Devonshire Road, Balham, London, S.W. 12. (South-Western Polytechnic, London.)
- 1919 Birch, Stanley Francis, 28, Marloes Road, Kensington, London, W. 8. (Imperial College of Science and Technology, London.)

- 1907 Black, Angus David, c/o Messrs, Nobel's Explosives Co., Ltd., Ardeer Factory, Stevenston, Ayrshire.
  (Royal Technical College, Glasgow.)
- 1918 Blakey. Robert Fitzjohn Wood, Directorate of Chemical Inspection, Royal Arsenal, Woolwich, London, S.E. 18. (F. G. Edmed, O.B.E., B.Sc., F.I.C.)
- 1918 Bloom, Edward, 61, Berwick Street, London, W. 1. (East London College, London.)
- 1917 Bockett, Eric John Cuming, Naseby, 89. King Charles' Road, Surbiton, Surrey.
  (King's College, London.)
- 1915 Bothamley, Richard Parkinson, Fernhurst, Gregory Boulevard. Nottingham. (University College, Nottingham.)
- 1913 Bowyer, Edgar George, 363, Essenwood Road, Durban, S. Africa. (2nd Lieut., Cambridgeshire Regt.)
  (University College, Natal.)
- 1919 Brearley, George, 46, Blakeridge Lane. Batley, Yorks. (The University, Leeds.)
- 1916 Bright, John Harold, Thornbury, Birmingham Road, West Bromwich, Birmingham.
  (A. E. Tucker, F.I.C.)
- 1918 Brindle, Harry, 54. Cawdor Road. Fallowfield. Manchester. (King's College, London.)
- 1916 Brisley, Charles William, 155. Croxted Road, Dulwich, London, S.E. 21. (Lieut., Irish Guards.)
  (University College, London.)
- 1919 Broom, Walter Alfred. 2, Dixworth Grove, Mundella Road, Nottingham. (F. H. Carr, F.I.C.)
- 1919 Brown, Andrew Charles, 26, Springvale Place, Saltcoats, Ayrshire. (Williams Rintoul, O.B.E., F.I.C.)
- 1917 Brown, Frederick Stanley, Rosebank, Tile Hill Lane, near Coventry.
  (Artists' Rifles.)
  (G. S. Heaven, B.Sc., F.I.C.)
- 1918 Brown, Leslie Gilbert, 6, Airlie Gardens, Ilford, Essex. (2nd Lieut., R.A.F.)
  (Finsbury Technical College, London.)
- 1918 Browne, Rupert Pollard, 7, King Street, Richmond, Surrey. (University College, London.)
- 1917 Burns. Alan Chamley, 6, High Street, Whitehaven, Cumberland. (Lieut., attached R.E.)
  (The University, Manchester.)
- 1919 Burton, Harold, 22, Barnsley Road, Wath-on-Dearne, Yorkshire. (The University, Sheffield.)
- 1918 Burtt, Arnold Wigham, 73, Linden Road, Bourneville, Birmingham. (Friends' Ambulance Unit.)
  (N. P. Booth, Esq., F.I.C.)

### STUDENTS.

- 1914 Butler. Franz Herbert Culverhouse. South End, St. Cross, Winchester. (Captain, Hampshire Regt.; Assistant Provost-Marshal.) (The Unversity, Cambridge.)
- 1909 Buttrick, Harold Pease, 15, Braemar Avenue, Wood Green, London, N. 22. (Lieut., R.E.)
  (F. W. Richardson, F.I.C.)

# C

- 1907 Callan, Thomas. M.Sc. (Manc.), Ph.D. (Heid.), 2, Spring Bank, Crumpsall Lane, Higher Crumpsall, Manchester.
  (The University, Liverpool.)
- 1916 Campbell, Hugh Hannay, 3, Winton Place, Tranent, Scotland. (Motor Machine Gun Corps.)
  (Heriot-Watt College, Edinburgh.)
- 1919 Carey, Cecil Ernest, 59, Harefield Road, Brockley, London, S.E. 4. (E. V. Evans, M.B.E., F.I.C.)
- 1914 Carlisle, William Foster. 12. Northumberland Road, Sheffield. (Corporal, R.E.)
  (The University, Sheffield.)
- 1914 Carson, Samuel David, 20, York Street, Ayr. (Lieut., Royal Scots Fusiliers.)
  (Royal Technical College, Glasgow.)
- 1919 Caswell, Arthur Edward, 273. London Road, Thornton Heath, Surrey.
  (King's College, London.)
- 1916 Causer, Laurence William, 123, Ordnance Road, Enfield Wash, London, N.
  (Flight Cadet, R.A.F.)
  (G. F. Morrell, Ph.D., B.Sc., F.I.C.)
- 1914 Chalmers, Frederick Grant Duncan, M.A., B.Sc. (Aberd.), 50. Thornhill Road, Handsworth, Birmingham. (Corporal, R.E.) (The University, Aberdeen.)
- 1919 Chapman, Arthur William, 68, Geraldine Road, Wandsworth, London. S.W. 18. (Imperial College of Science and Technology, London.)
- 1917 Childs, Charles Bernard, 19. Vicarage Road, Handsworth, Birmingham.
  (The University, Birmingham.)
- 1919 Christie, George Herbert, 155, Sharrow Vale Road, Sheffield.
  (The University, Sheffield.)
- 1918 Clarke, Barri Ernest, 177, Anglesey Road, Burton-on-Trent. (R.A.M.C.)
  (C. G. Matthews, F.I.C.)
- 1909 Clarke, Lindsay Hamilton, 69. South Parade, Belfast. (Corporal. R.E.)
  (Queen's University, Belfast.)
- 1919 Claudet, Richard Arthur Ormerod, 41, Brunswick Square, Hove, Sussex. (King's College, London.)
- 1910 Clement, Julian, Lidsey Lodge, Bognor, Sussex. (Captain, Hampshire Regt.)
  (King's College, London.)

- 1919 Cocks, Herbert Charles, 89. Cairo Road, Walthamstow, London, E. 17. (Leo Taylor, F.I.C.)
- 1917 Cohen. Abraham, B.Sc. (Lond.), 296, Old Ford Road. Victoria Park, London, E. 3. (University College, London.)
- 1915 Cohen, Enoch Henry, B.Sc. (Lond.), 21, Frederick Place, Bow, London, E. 16. (R.N.A.S.) (A. E. Parkes, F.I.C.)
- 1910 Collen, Frank Dudley, The Quantocks, Vanbrugh Fields, Blackheath, London, S.E. (Major, Notts. and Derby Regt.; M.C.) (School of the Pharmaceutical Society, London.)
- 1917 Cooke, Francis Cyril, 16, Homefield Road, Wimbledon. London, S.W. 19. (Corporal, R.E.)
  (Imperial College of Science and Technology, London.)
- 1895 Cooper, Albert John Bullen, 80, Gloucester Road, South Kensington, London, S.W. 7. (School of the Pharmaceutical Society, London.)
- 1919 Cooper, Harold, Morning Dawn, Burnt Ash Lane, Bromley, Kent. (S. A. Vasey, F.I.C.)
- 1909 Cooper, Henry Edward, 42. Gough Road, Edgbaston, Birmingham. (Captain, attd. R.E.) (The University, Birmingham.)
- 1919 Cooper, Horace, Jubilee Street, Clayton-le-Moors, Accrington, Lancs.
  (Municipal Technical School, Blackburn.)
- 1919 Cooper, Nevill Bernard Willis, 113, Preston New Road, Blackburn, Lancs. (Municipal Technical School, Blackburn.)
- 1909 Cooper, William, Admiralty Chemist's Department, H.M. Dockyard,
  Portsmouth. (2nd Lieut., R.E.; M.C.)
  (Arnold Philip, B.Sc., A.R.S.M., F.I.C.)
- 1916 Corby, Frederick James, 102, Birmingham Road, Walsall. (2nd Lieut., R.E.)
  (F. E. Thompson, A.R.C.S., F.I.C.)
- 1916 Coutie, Alexander, 17, West Preston Street, Edinburgh. (Heriot-Watt College, Edinburgh.)
- 1910 Cowlishaw, George Dewnop, The Lawn, Shardlow, near Derby. (Corporal, York and Lancaster Regt.) (University College, Nottingham.)
- 1919 Cox, Albert Edward, 27, Athelstan Road, Faversham, Kent. (A. H. M. Muter, F.I.C.)
- 1915 Crawford, Archibald Barclay, Locher, Bridge of Weir, Renfrewshire. (R.A.O.C.) (Royal Technical College, Glasgow.)
- 1918 Crawley, Miss Ailsa Victoria, 41, Wroughton Road, London, S.W. 11. (Julian L. Baker, F.I.C.)

### STUDENTS.

- 1919 Cray, Frank Maurice, 36, Thorney Hedge Road. Gunnersbury, London, W. 4.
  (University College, London.)
- 1919 Crosbie-Oates, Raymond, The Chalet, Park West, Heswall, Cheshire.
  (The University, Liverpool.)
- 1916 Cunliffe, Percy Walmsley, 73, Waddington Road, Clitheroe, Lanes, (Flight Sub-Lieut., R.A.F.)
  (King's College, London.)
- 1908 Cutner, Morris, B.Sc. (Lond.), 82, Kingston Road, New Malden, Surrey. (King's College, London.)

# D

- 1915 Dakers, Robert Gillies Muir, Brae Villa, Haddington, Scotland, (Heriot-Watt College, Edinburgh.)
- 1919 Davey, Walter Cecil, 1, Somerset Road, Erdington, Birmingham. (D. F. Twiss, D.Sc., F.I.C.)
- 1917 Davey, Wilfrid Shacklock, 6, Clifton Terrace, High Street, Dovercourt.
  (Lieut., R.A.O.C.)
  (Prof. W. R. Dunstan, C.M.G., F.R.S.)
- 1917 Davidson, George, 670, Dumbarton Road, Partick West, Glasgow.
  (H.L.I.)
  (F. W. Harris, F.I.C.)
- 1911 Davies, Harry, Glenthorne, Norton, Stourbridge, Worcs.
  (Joseph Lones, F.I.C.)
- 1915 Davies, William Everard, Brynawel, Vicarage Road, Penygraig, S. Wales. (E. C. Evans, B.Sc., F.I.C.)
- 1919 Davis, Miss Mary, B.Sc. (Birm.), 23/24, Western Parade, South-ea, Hants.
  (T. Stenhouse, junr., B.Sc., A.R.C.S., F.I.C.)
- 1918 Dawkins, David Richard, Llwyncelyn, Skewen. (University College, Cardiff.)
- 1918 Dawn, Thomas Sydney. 21, Belsize Square, Hampstead, London, N.W. 3.
  (R.E.)
  (Imperial College of Science and Technology, London.)
- 1916 Day, Frank. 38. Cranfield Road, Brockley, London, S.E. 4. (2nd Lieut., R.G.A.).
  (W. R. E. Hodgkinson, C.B.E., Ph.D., F.I.C.)
- 1919 Dean, John Norman, The Birches, Durham Road, Bromley, Kent. (King's College, London.)
- 1913 Derbyshire, Sydney Frank. Curbar House, Newbold Moor, Chesterfield.
  (The University, Sheffield.)
- 1917 Dhavale, Bhaskar Balvant, M.A. (Bombay), Calcutta Research Tannery.
  Tangra, Bengal, India.
  (College of Technology, Manchester.)

### STUDENTS.

- 1916 Dickie. William Alexander. Kingsbury, Princess Drive, Borrowash,
  Derby.
  (H. L. Lucking, Ph.D., F.I.C.)
- 1918 Dickes, Miss Winifred Esther. 60, Melbury Gardens, Wimbledon, London, S.W. 19. (University College, London.)
- 1916 Dixon, Bertram Eastwood, 4, Gunton Avenue, Upper Clapton, London, E. 5.
  (Finsbury Technical College, London.)
- 1914 Doidge, Herbert Frederick, 3, Waldgrove Gardens, Upminster, Essex.
  (Major, R.A.S.C.)
  (University College, London.)
- 1911 Doolan, James Joseph, 46, Michael Street, Waterford.
  (B. O'Shaughnessy, A.R.C.S., F.I.C.)
- 1918 Doughty, Joseph Neatby. 33, Clarkehouse Road, Broomhall, Sheffield.
  (Durham Light Infantry.)
  (The University, Sheffield.)
- 1917 Douglas, Gordon Watson, Dunure. Westville Avenue, Ilkley, Yorkshire.
  (Thomas Fairley, F.I.C.)
- 1917 Drummond, Arthur Johnstone, 4, Grantly Gardens, Shawlands, Glasgow.
  (Lance-Corporal, Highland Cyclists Batt.)
  (Royal Technical College, Glasgow.)
- 1919 Dunn, Maurice William, 7, Emerson Road, Harborne, Birmingham. (Municipal Technical School, Birmingham.)
- 1910 Dyer, Miss Gwen. See Behrens.
- 1911 Dyne, Godfrey Walter Goodwick, B.Sc. (Lond.), 326, Riverdale Avenue, Yonkers, N.Y., U.S.A. (University College, London.)

# E

- 1918 Edmonds, Ronald Walter Quaife, 58. Park Street, Greenwich, London, S.E. 10. (Birkbeck College, London.)
- 1910 Elliott, Frank Larriston, 40, Arundel Gardens, London, W. 11. (King's College, London.)
- 1919 Ellis, Percival Francis, 72, Mackintosh Place, Cardiff.
  (University College, Cardiff.)
- 1915 Ellison, Luke Ridley, 21, Ossington Villas, Sherwood Street, Nottingham.
  (University College, Nottingham.)
- 1917 Evans, Norman Leslie, 19, Durham Road, Sparkhill, Birmingham. (H. L. Heathcote, M.Sc., F.I.C.)
- 1915 Evans, Tudor Idris James, 102, Donald Street, Roath, Cardiff. (Lieut.)
  (University College, Cardiff.)

### STUDENTS.

1918 Ewing, Miss Margaret Anderson, M.A. (Aberd.), c'o Macdonald, 43, Kerr Street, Pollokshields, Glasgow. (Royal Technical College, Glasgow.)

# F

- 1916 Farrer, William John Gladstone, I. Prince's Parade. Church End, Finchley, London, N. 3. (R.E.).
  (Finsbury Technical College, London.)
- 1919 Farrer, William Lynch Hurbow, Fern Leigh, Wakefield Road, Tanshelf,
  Pontefract, Yorks,
  (C. P. Finn, B.Sc., F.I.C.)
- 1917 Ferguson, John, 15. Dean Crescent, Stirling, Scotland.
  (Royal Technical College, Glasgow.)
- 1916 Ferrier, George Straton, 10, Hamilton Park Terrace, Hillhead, Glasgow, (2nd Lieut.)
  (Royal Technical College, Glasgow.)
- 1914 Firth, William Stanley, 92, Bridge Street, Castleford, Yorks. (Harry Ingle, D.Sc., Ph.D., F.I.C.)
- 1919 Fisher, Alfred, 50, Exeter Road. Nottingham. (University College, Nottingham).
- 1918 Fisher, H. Elias, 4, Havering Street, London. E. 1. (Finsbury Technical College, London.)
- 1919 Fitter, Raymond John. 23, Woodwarde Road, East Dulwich, London, S.E. 22.
  (University College, London.)
- 1914 Follows, Geoffry Shield. (Lieut., King's Liverpool Regt.)
  (Imperial College of Science and Technology, London.)
- 1915 Forrester, Charles, 4, Barclay Terrace, Edinburgh. (Corporal, R.A F.) (Heriot-Watt College, Edinburgh.)
- 1919 Fox, Miss Margaret Lucy, 5, Strafford Road, Twickenham. (E. Grant Hooper, F.I.C.).
- 1910 Fraser, Frank Jardine, 12, Nicander Road, Sefton Park, Liverpool. (R.E.)
  (E. W. Lucas, C.B.E., F.I.C.)
- 1918 Fraser, James Ross, 13. Archibald Road, Tufnell Park, London, N. 7. (Finsbury Technical College, London.)
- 1918 Fuller, Charles Hubert Francis, 43. Lavender Vale. Wallington, Surrey. (Finsbury Technical College, London.)

# G

- 1915 Galletly, Charles Harvey, 960, Sauchiehall Street, Glasgow, W. (Corporal, R.E.). (Royal Technical College, Glasgow.)
- 1912 Garland, Thomas. (Corporal, R.E.) (Finsbury Technical College, London.)
- 1918 Gates, Stanley Frederick, 12, Albion Square, London, E. 8. (St. John's College, Oxford.)

### STUDENTS.

- 1913 Gibbs, Geoffrey Harcourt, 18, Russell Road, Kensington, London, W. 14. (Lieut, R.G.A.) (King's College, London.)
- 1915 Gibson, James, junr., Blackland Cottage, Paisley. (Corporal, R.E.) (Royal Technical College, Glasgow.)
- 1917 Glasspoole, John, B.Sc. (Lond.), 16, Pursers Cross Road, Fulham, London, S.W. 6.
  (A. V. Elsden, B.Sc., F.I.C.)
- 1916 Gold, Arthur Kempton, 1a, Lysia Street, Fulham, London, S.W. 6. (A/M., R.A.F.)
  (G. W. James, M.A., F.I.C.)
- 1917 Goodall, George Forrest, 22, Hartingdon Road, Chorlton-cum-Hardy, Manchester. (Lance-Corporal Seaforth Highlanders.) (Royal Technical College, Glasgow.)
- 1919 Graham, Gilbert, 7. Campsie Terrace, Thornliebank, nr. Glasgow. (Roval Technical College, Glasgow.)
- 1919 Grant, William Thomas, 3, Wells Street, Grav's Inn Road, London, W.C. 1.
  (William Bacon, B.Sc., F.I.C.)
- 1916 (Freenberg, Solomon, 41, Frithville Gardens, Uxbridge Road, London, W. 12.
  (East London College, London.)
- 1917 Greenfield. Geoffrey James, West Street, Storrington, Pulborough, Sussex. (Imperial College of Science and Technology, London.)
- 1917 Greenstreet, Victor Robert, 56, Clifton Road, Church End. Finchley, London, N. (Finsbury Technical College, London.)
- 1917 Greenwood, Miss Gladys May, B.Sc. (Lond.). 18, Devonshire Road, Blackpool, Lancs. (King's College, London.)
- 1917 Gregory, Thomas Edmund. (The University of Bristol.)
- 1916 Griffith. Percy Terence, 84, New Park Road, Streatham, London. S.W. 2. (J. G. Lord, M.A., F.I.C.)
- 1908 Griffiths, Hugh. B.Sc., A.R.C.S. (Lond.), 41, Castle Street, Liverpool. (Imperial College of Science and Technology, London.)
- 1917 Griffiths, Jenkyn Arthur, 93, Cilfynydd Road, Pontypridd, Glam. (R.N.A.S.). (E. C. Evans, B.Sc., F.I.C.)
- 1919 Griffiths, William Thomas, 178, Cathays Terrace, Cardiff. (University College, Cardiff.)

# Н

1914 Hand, Percy George Terry, 199, Selhurst Road, S. Norwood, London, S.E. 25. (Cadet, R.E.)
(Lieut.-Colonel E. F. Harrison, C.M.G.)

- 1918 Harbord, Vernon, 3. Artillery Mansions, Victoria Street, London, S.W. 1.
  (Lieut.)
  (F. W. Harbord, Esq., C.B.E., F.I.C.)
- 1911 Hatch, Frank Agerman, Rivadet House, Gentleman's Row, Enfield. (Finsbury Technical College, London.)
- 1913 Hatfield. Cyril George Meney, "Little Haylands," Chigwell, Essex. (Captain, Middlesex Regt.)
  (E. Grant Hooper, F.I.C.)
- 1919 Hayhurst, Horace, 57, Preston Old Road, Wilton, Blackburn. (Municipal Technical School, Blackburn.)
- 1916 Hedgeock, Stuart William. 67, Braxted Park, Streatham Common, London, S.W. 16. (King's College, London.)
- 1916 Hemmings. William George. Kingsley, Friern Lane, New Southgate,
  London, N. (2nd Lieut. Essex Regt.)
  (Finsbury Technical College, London.)
- 1910 Henry, Jack, 'Halton,' Daisybank, South Beach Avenue, Ardrossan. (Captain, Royal Scots Fusiliers).
  (Royal Technical College, Glasgow.)
- 1918 Heslop, Henry Middleton, Ittley, Tregolls Road, Truro, Cornwall, (University College, Cardiff.)
- 1915 Hickinbottom, Wilfred John, Alexandra House, Sandbanks Road, Lower Parkstone, Dorset. (The University, Birmingham.)
- 1917 Higham, Frank, 57, Widdrington Road, Coventry. (G. S. Heaven, B.Sc., F.I.C.)
- 1919 Hill, Joseph, 58, Spring Street, Accrington, Lancs.
  (Municipal Technical School, Blackburn.)
- 1548 Hill. William Robert, Ship Hotel, Flottergate, Grimsby. (Cadet.)
  (J. A. Foster, F.I.C.)
- 1919 Himmat. Mahmood Ahmed, Government Analytical Laboratory, Cairo, Egypt. (Alfred Lucas, F.I.C.)
- 1919 Hindes, Frederic William, 1, Barlow Street, Oldham. (Prof. A. G. Green, M.Sc., F.R.S.)
- 1910 Hipwell, Sydney John.
  (King's College, London.)
- 1945 Hislop, Stephen Lunn, 17. Melville Terrace, Edinburgh. (Corporal, R.E.) (Heriot-Watt College, Edinburgh.)
- 1916 H. cking, Frederick Denisen Maurice, 1s, Woodside Park Road, North Finchley, London, N. 12. (R.N.) (Finsbury Technical College, London.)
- 1915 Hoff, Ronald William, 14, West Street, Leominster. (R.E.) (F. E. Thompson. A.R.C.S., F.I.C.)

- 1915 Hoffman, Herbert. 51, Linthorpe Road. Stamford Hill, London, N. 16. (King's College, London.)
- 1918 Hoffstein, Frederick, 106, Sidney Street, Mile End. London, E. 1. (King's College, London.)
- 1919 Holden, William Thomas, 22, Earnsdale Road, Darwen. (Municipal Technical School, Blackburn.)
- 1918 Hollingsworth, Clifford, Brooklyn, Broomfield Road, Chadwell Heath, Essex.
  (Birkbeck College, London.)
- 1914 Holmes, Fred-rick Henry The Oaks. Duffield, near Derby.
  (John White, F.I.C.)
- 1914 Holt, Hammersly David George. 254, Camden Road. London. N.W. 1. (2nd Lieut., Royal Fusiliers.) (The University, Cambridge.)
- 1919 Hopkins, Sidney John. London House, Hambledon, Hants. (Finsbury Technical College, London.)
- 1918 Horn, Alfred Henry, 683, Barking Road, Plaistow, London, E. 13. (East London College, London.)
- 1917 Horton, Laurence, 45, Steade Road, Sheffield. (John Evans, F.I.C.)
- 1910 Hough, Alexander Thomas. 95, Abbeyfield Road, Rotherhithe, London, S.E. 16.
  (James Gordon Parker, Ph.D., F.I.C.)
- 1917 Howard, Herbert Leslie. The Ferns. 14, South-Eastern Road, Ramsgate. (Edmund White, B.Se., F.I.C.)
- 1919 Howard, Thomas George, 42. St. Alban's Avenue, Bedford Park, London, W. 4.
  (C. O. Bannister, A.R.S.M., F.I.C.)
- 1919 Huddart, Reginald, 30, Blessington Road. Lee, London, S.E. 13. (University College, London.)
- 1913 Hulme, William, M.Sc. (Manc.). Brook House, London Road, Macclesfield. (The University, Manchester.)
- 1917 Hutchins, Miss Kathleen Mary Burrows, 30, Willoughby Road, Hampstead, London, N. W. 3. (Sir Herbert Jackson, K.B.E., F.R.S.)
- 1912 Hutchison, Archibald Moritz. B.Sc. (Lond.), 2. Edith Villas, Brantham, near Manningtree. (Oliver Trigger, F.I.C.)
- 1919 Hutton, John Stevenson, 44, Seafield Road, Dundee. Scotland. (Thomas Jamieson, F.I.C.)
- 1919 Hutton, Robert, North Park, Thornliebank, near Glasgow. (Royal Technical College, Glasgow.)
- 1918 Hyslop, William McNinch, Damulin, 17, Craigie Road Ayr. (Royal Technical College, Glasgow.)

### STUDENTS.

1

0

- 1919 Illing, Edward Thomas, St. Andrew's House, Roupell Street, Lambeth, London, S.E. 1. (Cyril Dickinson, F.I.C.)
- 1919 Inglis, Alexander Stewart Robertson, 15. Waverley Park, Edinburgh. (Heriot-Watt College, Edinburgh.)

# 1

- 1919 Jackson, John Arnold, 167, Westbourne Avenue, Great Lever, Bolton. (Harry Hurst, F.I.C.)
- 1917 Jackson, Stanley Ridings. 13, Dover Street, Chorlton-on-Medlock, Manchester. (Cadet O.C.B.) (College of Technology, Manchester.)
- 1919 Jenkins, Samuel Harry, 138, Bury New Road, Broughton, Manchester.
  (Harold Stevenson, F.I.C.)
- 1914 Jermain, William Morgan, B.Sc. (Wales). 10, Wordsworth Avenue, Cardiff. (King's College, London.)
- 1918 Johnson, Ernest Norman, 167, Belle Vue Road, Leeds, (B. A. Burrell, F.I.C.)
- 1908 Johnston, Thomas Nicholl, B.Sc. (Q.U.I.), 42. West High Street, Salford, Manchester.
  (Queen's University, Belfast.)
- 1918 Jones, David Llewellyn, 1. Marble Terrace, Llandyssul, S. Wales. (University College of Wales, Aberystwyth.)
- 1915 Jones, Harold Bramfield, Broadway House, Northolme Road, Highbury, London, N. 5.
  (E. Grant Hooper, F.I.C.)
- 1917 Jones, Leo Francis, St. Elmo, Caerleon, Mon. (J. A. Hatfield, F.I.C.)
- 1919 Jones, Norman Ellathorne, 169. Wanstead Park Road, Ilford, Essex. (Bernard Dyer, D.Sc., F.I.C.)
- 1918 Jones, Richard Arthur, 14, The Avenue, High Barnet, Herts. (R.E.) (Finsbury Technical College, London.)
- 1916 Jones, William Forster, 5. Forest Grove, Treforest, Glam. (2nd Lieut., R.A.F.)
  (E. C. Evans, B.Sc., F.I.C.)
- 1917 Joseph. David Lavington Glyde, Lindon House, Church Road, London, N.W. 4.
  (King's College, London.)
- 1910 Joynson, George. (Lancashire Fusiliers. (J. C. Platts, F.I.C.)

### STUDENTS.

# K

- 1918 Kelby, Herbert John, 148. Olive Road, Cricklewood, London, N.W. 2. (East London College, London.)
- 1919 Kenyon, Frank, 20, Wellfield Road, Blackburn. (Municipal Technical School, Blackburn.)
- 1915 King, Frederick John. Oakhurst. Stanley Avenue. Wembley, Mi bile-ex (R.N.A.S.)
  (Finsbury Technical College. London.)
- 1918 Kirkland, Miss Margaret Kerr, 5, Illis Street, Kilmarnock. (Royal Technical College, Glasgow.)
- 1916 Kitson, Joe, Wallroyds, Denby Dale, Yorkshire. (H. Webster Moss, F.I.C.)
- 1918 Knight, Harry Richard, 2, Rossley Road, Lewisham, London, S.E. 13. (C. O. Bannister, A.R.S.M., F.I.C.)
- 1918 Kotibhaskar, Moreshvar Ganesh, The College of Technology, Manchester, (The College of Technology, Manchester.)

- 1917 Laiwala, Kumudchandra Ghelabhai. c b Messrs. Th mas Cook & Son. Ludgate Circus, London, E.C. 4. (John Wilson, M.Sc., F.I.C.)
- 1919 Lavery, David, 91, Coventry Drive, Dennistoun. Glasgow. (Royal Technical College, Glasgow.)
- 1912 Lazell, Harold, 75. Comeragh Road, Burons Court, London, W. 14 (University College, London.)
- 1910 Lees, Arnold, County Laboratory, 36. Dansie Street, Liverpool. (G. W. Slatter, A.R.C.S.I., F.I.C.)
- 1919 Legg, Vernon Howes, 95, Carter Knowle Road, Millhouses, Sheffield (The University, Sheffield.)
- 1911 Leighton, Frederic William, Assoc, M.S.T. (Metallurgy), Lydiard Tregole Wootton Bassett, Wilts.
  (College of Technology, Manchester.)
- 1919 Leitch, James Muil, 1, Ormonde Mount, Muirend, Glasgow.
  (Royal Technical College, Glasgow.)
- 1917 Lighton, Charles, 14, Loddiges Road, Hackney, London, E. 9. (Finsbury Technical College, London.)
- 1909 Lochhead, Kenneth George, 23, Park Road, Rugby. (Royal Technical College, Glasgow.)
- 1910 Lorimer, John William, 195, Cliffe Road, Strood, Rochester, Kent. (Royal Technical College, Glasgow.)
- 1918 Lowndes, Arnold Bradley.
  (Lieut.-Commander J. E. Coates, O.B.E., D.Sc., F.I.C.)

### STUDENTS.

- 1919 Lucke, Douglas Thurlow, Gemeete, Cliffsea Grove, Leigh-on-Sea, Essex (Leo Taylor, F.I.C.)
- 1907 Lynch, Gerald Roche, M.B., B.S. (Temp. Surgeon, R.N.)
  (Imperial College of Science and Technology, London.)

# M

- 1911 MacDonald, Charles Stuart, 8, Clarence Road, Southsea, Hants. (Arnold Philip, B.Sc., A.R.S.M., F.I.C.)
- 1913 MacDougall, Duncan, 9, Yarrow Gardens, Kelvinside North, Glasgow.
  (Company Quartermaster-Sergeant, R.E.)
  (Royal Technical College, Glasgow.)
- 1913 Mackénzie, Peter, Reidchalmie, Rogart, Sutherland. (Captain, R.E.) (Royal Technical College, Glasgow.)
- 1916 Macqueen, John Melven, Bryn Gwyn, 88, Musvell Road, Muswell Hill. London, N. 10. (Joseph Savers, F.I.C.)
- 1918 Mulan, Pierre Simend, Merindel, Hilton Read, Orangezicht, Cape Town, S. Africa.
  (C. F. Juritz, D.Sc., F.I.C.)
- 1919 Maltby. John Gwilliam. 29, Winchelsea Avenue, Newark. (University College, Nottingham.)
- 1916 Mann, Donald, Sunnyside, Earls Colne, Essex. (Suffolk Regt.) (University College, London.)
- 1918 Maplethorpe, Cyril Wheatley, 16, Chesn it Avenue, Queen's Road, Hull (Lieut.-Colonel E. F. Harrison, C.M.G.)
- 1912 Martin, Charles William, 66, Mitcham Road, East Ham, London, E. 6. (J. C. Thresh, D.Sc., M.D., F.I.C.)
- 1919 Martin, George Frank. 85, Church Hill, Walthamstow, London, E. 17. (Imperial College of Science and Technology, London.)
- 1919 Mason, Denis Clifford, The Firs, Bromsgrove, Worcestershire.
  (A. E. Tucker, F.I.C.)
- 1919 Mathias, Owen, 31, Clarendon Road, Whalley Range, Munchester. (W. D. Rogers, A.R.C.S., B.Sc., F.I.C.)
- 1917 Matthews, Norman Louis, 45, Tyrwhitt Road, Brockley, London, S.E.;
  (Inns of Court O.T.C.)
  (Finsbury Technical College, London.)
- 1903 McKee, Gilbert Stuart, Mill Bank Cottage, Frodsham, Cheshire. (University College, Nottingham.)
- 1919 Mellenfield, Alan Keith, Elmstead, 140, Barnt Ash Hill, Lee, London, S.E. 12.
  (P. A. Ellis Richards, F.I.C.)
- 1918 Mendel, Lazarus, 12, Campden Hill Gardens, Notting Hill Gate, London, W. 11. (Finsbury Technical College, London.)
- 1919 Milford, Harry, 30, Teviotdale Place, Glenogle Road, Edinburgh. (Heriot-Watt College, Edinburgh.)

### STUDENTS.

- 1914 Miller, Cecil James, 4, Victoria Road, Brighton, Sussex. (R.E.) (R. A. Cripps, F.I.C.)
- 1912 Mitchell, Claude Alexander Dunbar, c'o Messrs, Cox & Co., Hornby Road, Bombay, India. (Lieut., Devon Regt.)
  (The University, Oxford.)
- 1919 Morris, Fred, 73, Calvert Road, Bolton, Lancs. (Harry Hurst, F.I.C.)
- 1917 Moscow, Joseph, 14, Abinger Road, Bedford Park, London, W. 4. (East London College, London.)
- 1919 Moses, Benjamin, B.Sc. (Liv.), 37, Lytton Avenue, Manchester. (College of Technology, Manchester.)
- 1919 Mottram. Edward Neville, 49, Wellington Road, Eccles.
  (The University, Manchester.)
- 1917 Muddiman, Ernest Walter. 52. Tanfield Road, Birkby. Huddersfield, Yorks.
  (James Bruce, Ph.D., B.Sc., F.I.C.)
- 1914 Muggeridge, Harry Douglas, 17, Birdhurst Gardens. South Croydon, London, S.E. (Lieut., Royal Sussex Regt.) (Lieut.-Colonel Edward F. Harrison, C.M.G.)
- 1912 Mumford, Ernest Moore, 75. High Street, Chorlton-on-Medlock.
  Manchester. (Captain, Lancashire Fusiliers.)
  (Gilbert J. Fowler, D.Sc., F.I.C.)
- 1919 Munro, Reginald James, Bankier Villa, Banknock, Bonnybridge, Scotland, (Royal Technical College, Glasgow.)
- 1914 Murray. Kenneth Francis Malcolm. c o Messrs. Keymer, Son & Co., 1, Whitefriars Street, London, E.C. 4. (Captain, London Regt.) (King's College, London.)
- 1918 Murdoch, Donald George, 26, Olive Road, Cricklewood, London, N.W. 2. (Finsbury Technical College, London.)
- 1917 Murphy, Edward Arthur, 29, Arthur Road, Erdington, Birmingham.
  (II. A.M., R.N.V.R.)
  (Municipal Technical School, Birmingham.)

# N

- 1919 Naylor, Henry, 32, Accrington Road, Blackburn, Lancashire, (Municipal Technical School, Blackburn.)
- 1915 Neal, Brian Henry, S, Fielding Terrace, Ealing Common, London, W. 5. (Imperial College of Science and Technology, London.)
- 1912 Nelson. William Robert Francis. 54, Tytherton Road. London. N. 19 (Finsbury Technical College, London.)
- 1917 Newby, Cecil Frank John, 21, Basils Road, Stevenage, Herts. (S. Judd Lewis, D.Sc., F.I.C.)

### STUDENTS.

- 1919 Newby, Edward John. 6. Shaw Road, Berkeley Avenue, Reading. (University College, Reading.)
- 1918 Newcombe, Miss Vera, 65, Southfield Road, Middlesbrough.
  (School of the Pharmaceutical Society.)
- 1912 Newitt, Lewis Dunn, 28, Craven Hill Gardens, Lancaster Gate, London, W. 2. (Lieut., Royal Artillery.)
  (William Rintoul, O.B.E., F.I.C.)
- 1911 Newman, Herbert Samuel, M.Sc.Tech. (Manc.), Ivy House, Alderfield Road, Edge Lane, Chorlton-cum-Hardy, Manchester. (Frank Scudder, F.I.C.)
- 1919 Newton, Leonard Owen, 29, St. Mildred's Road, Lee, London, S.E. 12. (J. H. Paul, B.Sc., F.I.C.)
- 1918 Norman, Henry Robert Borchardt. 26. Howitt Road, Belsize Park.
  Hampstead, London, N.W. 3.
  (King's College, London.)

# 0

- 1912 Oates, Frank. B.Sc. (Lond.), 5. Langside Avenue. Upper Richmond Road, Putney, London, S.W. 15. (Sergeant, R.E.) (John Wilson, M.Sc., F.I.C.)
- 1917 Ogilvie, Cyril Barker, Airlie, Sollershott W., Letchworth, Herts. (Finsbury Technical College, London.)
- 1917 Ogilvie, Stanley Hine. 17, Sollershott W., Letchworth, Herts. (Finsbury Technical College, London.)
- 1919 Ollard, Eric Alexander, Salcombe, S. Devon.
  (Imperial College of Science and Technology, London.)

# P

- 1918 Page. Arthur Reginald, 63, Walford Road, Sparkbrook, Birmingham. (F. C. A. H. Lantsberry, M.Sc., F.I.C.)
- 1915 Parkes, Hubert Alfred, 56. Laurence Lane, Oldhill, Staffs. (A. E. Parkes, F.I.C.)
- 1919 Patterson, William Stewart, 85, Abbey Road, Barrow-in-Furness. (H. B. Weeks, F.I.C.)
- 1908 Pechey, William George, 54, High Street, Maldon, Essex. (Corporal, Leicestershire Regt.)
  (V. H. Kirkham, B.Sc., F.I.C.)
- 1919 Perren, Edward Arthur, 70, Denton Road, Hornsey, London, N. S. (Imperial College of Science and Technology, London.)
- 1919 Phillips, Archibald John, 35. Surrey Road, Peckham Rye. London, S.E. 15. (Birkbeck College, London.)

#### Intract Admission

### STUDENTS.

- 1919 Phillips, Henry, 72, Ferntower Road, Canonbury, London, N. 5. (University College, London.)
- 1915 Phillips, Reginald John, 8, Milford Road, Harborne, Birmingham. (I.A./M., R.N.A.S.)
  (A. W. Knapp, B.Sc., F.I.C.)
- 1915 Phillips. Sydney Bertram, S. Milford Road, Harborne. Birmingham. (Leading Mechanic, R.N.A.S.)
  (A. W. Knapp, B.Sc., F.I.C.)
- 1919 Pink, Herbert Sheppard, The Limes, Newark-on-Trent. (University College, Nottingham,)
- 1913 Pollard, Hubert Eugene, S. Derby Road, Heaton Moor, Stockport. (Friends' Ambulance Unit.)
  (Gilbert J. Fowler, D.Sc. F.I.C.)
- 1918 Porter, Charles Raymond, 21, St. Martin's Road, Canterbury.
  (E. M. Hawkins, F.I.C.)
- 1919 Powers, Harold Edward Charles, 4, Grove Crescent, Woodford, London, E. 18.

  (Birkbeck College, London.)
- 1918 Price, Tom Brinley, 49. Stanwell Road, Penarth, near Cardiff. (Univerity College, Cardiff.)
- 1917 Print, Harold Celestine, 69, Selsey Road, Edgbaston, Birmingham. (2nd Lieut., R.A.F.) (The University, Birmingham.)
- 1919 Pulsford, Arthur Donald, 32, Loring Road, Isleworth, Middlesex. (George Stubbs, O.B.E., F.I.C.)

# Q

1919 Quastel, Juda Hirsch, 73, Ecclesall Road, Sheffield.
(Imperial College of Science and Technology.)

# R

- 1915 Rankin, John. Ravenslea, Bothwell, near Glasgow. (Royal Technical College, Glasgow.)
- 1919 Rawling, Tom, 24, Norwood Terrace, Victoria Road, Headingley, Leeds, (Robert Gawler, M.Sc., F.I.C.)
- 1919 Reece, William Henry, 113, St. Benedict's Road, Small Heath, Birmingham.
  (D. F. Twiss, D.Sc., F.I.C.)
- 1915 Reid, Douglas Montague, 33, Greenbank Crescent, Edinburgh. (The University, Edinburgh.)
- 1919 Rhodes, Henry Taylor Fowkes, 18, Belmont Hill, Lee, London, S.E. 13, (G. H. Perry, M.B.E., F.I.C.)
- 1916 Ridyard, Herbert Norman, 58, Holywell Hill, St. Albans, Herts. (Corporal R.E.)
  (C. H. Cribb, B.Sc., F.I.C.)

### STUDENTS.

- 1913 Roberts, Ellis Junes, B.S., (Wales . Dimurben, Abergele, N. Wales, (Sub-Lieut., R.N.V.R.)
  (University College, Bangor.)
- 1911 R berts, John David, D.S., (Walls), 9. Harr w Read, Padd et n. London, W. 2.

  (A. E. Parkes, F.I.C.)
- 1019 Reberts in Gilbert Princ. 20, Leithart Street, Stenel, use, Lamarkshi et (Royal Technical College, Glasgow.)
- 1911 Robson, James Cyril, 16. Viewpark Drive. Burnside, Rutherglen, Glasgow. (2/Lieut., R.G.A.).
  (Royal Technical College, Glasgow.)
- 1915 Roger, Robert, The Lister Institute, Elstree, Herts.
  (University College, Dundee.)
- 1911 Rogers, Edgar William. (Lieut., West Riding Regt.) (C. Edward Sage, F.I.C.)
- 1919 Rossiter, George Friend. 11. Bank Street, Teignmouth, S. Devon. (Birkbeck College, London.)
- 1917 Rowe, James Walker, Anti-Aircraft Reserve Brigade, Newport. I. of W. (2nd Lieut., R.G.A.)
  (J. G. Lord, M.A., F.I.C.)
- 1917 Roxburgh, Andrew, 271, Clifton Road, Rugby.
- 1918 Roy, William, 155. Comelypark Street, Glasgow. (F. W. Harris, F.I.C.)
- 1913 Rudde at Frederick Am. by Rudal Naval College, Greenwich Land n, S.E. 10. (York and Lancaster Regt.)
  (University College, Cardiff.)
- 1903 Rudolf, Marcus Edward Stanley, 61. Brondesbury Road. Kilburn, London, N.W. 6. (Corporal, R.E.) (A. Chaston Chapman, F.I.C.)

# S

- 1918 Sawers, Thomas Jack, Woodend, Eastwood, Giffnock, Renfrewshire.
  (The Royal Technical College, Glasgow.)
- 1916 Scarf, Frank, 51, High Street, Harborne, Birmingham.
  (The University, Birmingham.)
- 1911 Senier, Alam B.Sc. (Leeds). Holmwoft, Fagley Road, Bradford, Yorks (Captain, R.F.A.; M.C.) (The University, Leeds.)
- 1915 Sensiele, Laurence Henry, D.Sc. (Lendr, 11. Winds r Read. Forest Older London, E. 7. (I.A./M., R.A.F.) (E. C. Evans, B.Sc., F.I.C.)
- 1914 Sewell, John, 166, Victoria Street, London, S.W. 1. (2nd Lieut., R.A.F.) (Leo Taylor, F.I.C.)
- 1913 Shelden, Francis Joseph, B.Sc. (I. nd.), Mountfield, 17, Convers R. ad. Streatham, London, S.W. 16.
  (Imperial College of Science and Technology, London.)

- 1919 Shimwell, John Lister, 70. Station Road, Harborne, Birmingham.
  (Municipal Technical School, Birmingham.)
- 1919 Shoesmith, John Baldwin, Saxon House, Thursby Square. Burnley. (Frank Maudsley, B.Sc., F.I.C.)
- 1913 Shore, Miss Agnes, The Old Mill House, Farnham. Surrey. (King's College, London.)
- 1919 Shorrock, James Norman, Beech Mount, Winnington, Northwich, Cheshire.
  (College of Technology, Manchester.)
- 1919 Singer, Nathan, 147. Upper Clapton Road, London. E. 5. (Finsbury Technical College, London.)
- 1916 Smith, Alexander M.. 13, Viewforth Gardens, Edinburgh. (Lance-Corporal, Gordon Highlanders). (Heriot-Watt College, Edinburgh.)
- 1915 Smith, Douglas Gordon, Hucclecote Lodge, Hucclecote, near Gloucester.
  (Leading Mechanic, R.N.A.S.; D.S.M.)
  (Imperial College of Science and Technology, London.)
- 1915 Smith, Francis Walter Hodges. 181, Belle Vue Road, Leeds. (R.N.A.S.) (A. R. Smith, M.Sc., F.I.C.)
- 1919 Smith, John, 31, Dempster Street, Greenock, Scotland. (The University, Glasgow.)
- 1917 Smith, William, 71, Bellvue Road, Edinburgh. (Heriot-Watt College, Edinburgh.)
- 1914 Snow, Walter Alfred, Ingleside, Mount Pleasant Road, Newport,
  I. of W. (Cadet, R.E.)
  (W. Lawrence Gadd, F.I.C.)
- 1910 Solomon, Simon, 22, Sainfoin Road, Upper Tooting, London. S.W. 17. (Finsbury Technical College, London.)
- 1916 Southerton, Leslie Charles, 128, Golden Hillock Road. Small Heath, Birmingham. (I.A./M., R.N.A.S.) (The University of Birmingham.)
- 1917 Sparling, Miss Ellen Emma, 19, The Pavement, Clapham Common, London, S.W. 4.
  (C. A. Hill, B.Sc., F.I.C.)
- 1918 Spearing, Kenneth Arthur, Winslade, Eversfield Road, Reigate, Surrey. (Finsbury Technical College, London.)
- 1913 Spicer, John Inglis. 36. Stevenson Drive, Langside, Glasgow, S.S. (Captain, East Lancashire Regt.)
  (Royal Technical College, Glasgow.)
- 1912 Spurling, Abraham Charles, St. Helen's, 6, Clive Road. West Hampstead, London, N.W. 6.
  (Charles A. Keane, Ph.D., D.Sc. F.I.C.)
- 1916 Squires, Gordon Albert Upton, Biddulph House, 58, Narborough Road, Leicester. (University College, Nottingham.)

### STUDENTS.

- 1909 Stead, Frederick Arnold, Everdon, Redcar, Yorks.
  (Armstrong College, Newcastle-on-Tyne.)
- 1912 Stephens, Henry Charles, 20, Church Crescent, Muswell Hill. London, N. 10. (Lieut., R.A.F.)
  (J. G. Lord, M.A., F.I.C.)
- 1919 Sterne. Edmund Joseph, School House, Felsham, Bury St. Edmunds, Suffolk. (G. H. Perry, M.B.E., F.I.C.)
- 1915 Storer, George Paterson, 48, Llanthewy Road, Newport, Mon. (J. A. Hatfield, F.I.C.)
- 1904 Strachan, James Thallon, The Canada Paper Co., Ltd., Windsor Mills, Quebec, Canada.
  (Heriot-Watt College, Edinburgh.)
- 1912 Suckling, Ernest Victor, New London Road, Chelmsford, (Lieut., R.A.M.C.; mentioned in despatches.)
  (J. C. Thresh, M.D., D.Sc., F.I.C.)
- 1915 Sutton, Francis Colin. 21, Lydford Road, Cricklewood, London, N.W. 2, (The University, Liverpool.)
- 1918 Sykes, Arthur Hales Hugessen Ganthony, 16, Edith Road, W. Kensington, London, W. 14.
  (C. O. Bannister, A.R.S.M., F.I.C.)

# T

- 1919 Tavroges, Joseph, 137, Elizabeth Street, Hightown, Manchester. (East London College London.)
- 1918 Tayar, Robert Alfred Victor, 2, Laxey Road, Rotton Park, Birmingham. (William Russell, F.I.C.)
- 1911 Taylor, A. J., B.Sc. (Maritzburg), 866, Umgeni Road, Durban, South Africa. (2nd Lieut., Royal Artillery).
  (J. S. Jamieson, F.I.C.)
- 1914 Taylor, Cyril Bertram, Westfield Cottage, Woking, Surrey. (Lieut., R.E.) (Imperial College of Science and Technology, London.)
- 1913 Taylor, Harry Alan, Imports and Exports Office, Hong Kong. (School of the Pharmaceutical Society, London.)
- 1918 Taylor, James. 2, Nibthwaite Road, Harrow, Middlesex. (H.A.C.) (East London College, London.)
- 1919 Taylor, James Gemmell, Calderbank, Baillieston, Glasgow. (R.N. Experimental Station.)
  (The University, Glasgow.)
- 1909 Thomas, Howel Ernest Lewis, Dyffryn Vicarage, Neath. Glam. (King's College, London.)
- 1911 Thompson, Sidney Gilchrist. Kippington Vicarage, Sevenoaks, Kent.

  (Captain, West Kent Yeomanry.)

  (The University, Oxford.)
- 1912 Thomson, Matthew Sydney, B.A. (Cantab.), 55, Heron Court Road, Bournemouth. (Lieut., R.A.M.C.)
  (J. G. Lord, M.A., F.I.C.)

# Date of

### STUDENTS.

- 1917 Thoms n. Robert William Murray, 1, Hyndford Terrace. Dundee. (2nd Lieut., R.G.A.)
  (University College, Dundee.)
- 1909 Thernlet, Tom. B.Sc., A.R.C.S. (Lond.), "Sunnyhurst," Shackleton Road, Southall, Middlesex. (Imperial College of Science and Technology, London.)
- 1917 Toms. Har dd, 33. Park Road, South Wanstead, London. E. 12. (George Senter, D.Sc., Ph.D., F.I.C.)
- 1918 Tookey, Miss Phyllis Margaret, Combe Lodge, Duncombe Hill, Forest Hill, London, S.E. 23.
  (E. T. Brewis, F.I.C.)
- 1918 Trotman, Edward Russell. 1. Regent Street. Nottingham. (S. R. Trotman, F.I.C.)
- 1919 Tunley, Harold, 102, Windsor Street, Wolverton, Bucks, (University College, Reading.)
- 1919 Turner, Percival Elisha, Bath Cottage, Bath Road, Beenham, nr. Reading. (R.E.)
  (University College, Reading.)
- Turner, William Oliver, 78, Richmond Road, Leytonstone, London,
   E. 11. (R.N.V.R.)
   (East London College, London.)

# V

- 1919 Vaughan, Reginald Edward, The Dell House, Wooburn, Maidenhead, (Imperial College of Science and Technology.)
- 1919 Vince, Alfred Sydney, 30, Ravensbourne Road, Catford, London, S.E. 6. (C. A. Keane, Ph.D., D.Sc., F.I.C.)

# W

- 1905 Ward, Ernest Charles, co J. C. Ward, Esq., Granville House, Arundel Street, Strand, London, W.C. 2. (Captain, R.A.S.C.) (King's College, London.)
- 1918 Ward, Harry, 6. Mount Terrace, Holgate, York. (Lieut, R.G.A.) (The University, Leeds.)
- 1919 Warner, Bertrand Thomas, 438, Camden Road, Holloway, London, N. 7.
- 1917 Welch, Frank Robert, Lichfield Road, Four Oaks, Sutton Coldfield, Warwickshire.
  (S. S. Napper, A.C.G.I., F.I.C.)
- 1917 Weston, Arnold, 26, Clifton Street, Blackpool. (King's College, London.)
- 1919 Weston, Stanley Haworth. 25, Linn Terrace, Catheart, Glasgow. (Royal Technical College, Glasgow.)

- 1914 Whinfrey, Charles George, B.Sc. Birm.), co Allied Inspects in Department, c/o Curtis's Aeroplane Co., 2,000, Elmwood Avenue, Buffalo, N.Y., U.S.A. (Lieut.)
  (The University, Birmingham.)
- Whitby, William Henry, 127, Mersey Road, Widnes, Lancs. (Flight-Cadet, R.A.F.)(W. D. Rogers, A.R.C.S., F.I.C.)
- 1912 Whitham, Robert Parker Musgrave, Craven Lodge, Burnley. (Lieut. R.A.F.; M.C.)
  (Raymond Ross, F.I.C.)
- 1915 Whitworth, Abraham Bruce, 244, Garngad Hill, Glasgow, (Corporal, R.E.)
  (Royal Technical College, Glasgow,)
- 1919 Wilkes, Horace Edward, 60, Trinity Road, West Bromwich.
  (Municipal Technical School, Birmingham.)
- 1919 Williams, Albert, 103, Thornbury Avenue, Bradford, Yorks.
  (B. A. Burrell, F.I.C.)
- 1917 Williams, Ewart Harrod. 31, Thornsbeach Road, Catford, London, S.E. 6. (Queen's Westminster Rifles.)
  (Finsbury Technical College, London.)
- 1918 Williamson, Miss Annie, 33, East Mount Road, York. (The School of the Pharmaceutical Society.)
- 1916 Wilson, Donald Cumming, 5, Hope Place, Tranent. East Lathian, Scotland.
  (Heriot-Watt College, Edinburgh.)
- 1910 Wilton, John Boswell, 87, Abbey Road, Barrow-in-Furness. (H. B. Weeks, F.I.C.)
- 1916 Winbolt, Eric Archer. The Bermondsey Settlement, Farncombe Street,
  Jamaica Road, London, S.E. 16. (R.N.A.S.)
  (King's College, London.)
- 1918 Winch, Miss Hope Constance Monica, Brompton Vicarage, Northallerton.
  (The School of the Pharmaceutical Society.)
- 1912 Winter, Harold William, 17, Portland Street, Huddersfield, Yorks.
  (Finsbury Technical College, London.)
- 1918 Wiseman, Cecil Edgar, 54, Wellwood Road, Goodmayes, Hford, Essex.
  (Finsbury Technical College, London.)
- 1905 Woodhead, John Ezra, 62. Seely Road, Tooting, Lendon, S.W 17.
- 1894 Woodman, William Eustace, 28, Inchmery Road, Catford, London, S.E. 6. (King's College, London.)
- 1910 Woodroffe, David, M.Sc. (Leeds). 9, Burgess Road. Basingstoke, Hants. (The University, Leeds.)

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### STUDENTS.

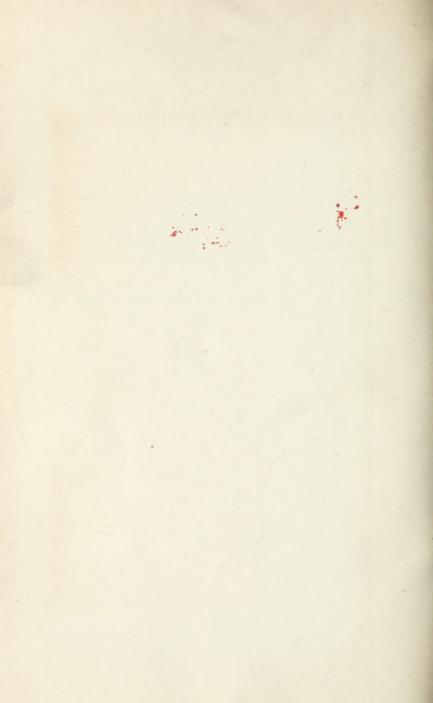
- 1919 Woodward, Miss Elsie, 80, St. Mary Street, Weymouth. (School of the Pharmaceutical Society.)
- 1918 Wright, Miss Eva Muriel, B.Sc. (Lond.), 141, Mitcham Lane, Streatham, London, S.W. 16. (King's College, London.)

# Y

- 1919 Yorston, James, 29, Winton Place, Tranent, East Lothian, Scotland. (Heriot-Watt College, Edinburgh.)
- 1919 Youll, John William Reginald. Keswick, Rainsford Avenue, Chelmsford. (Finsbury Technical College, London.)
- 1919 Young, Edward Bernard, 130, Trinity Street, Gainsborough. (East London College, London.)

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